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Water Resources Data
Washington
Water Year 1983

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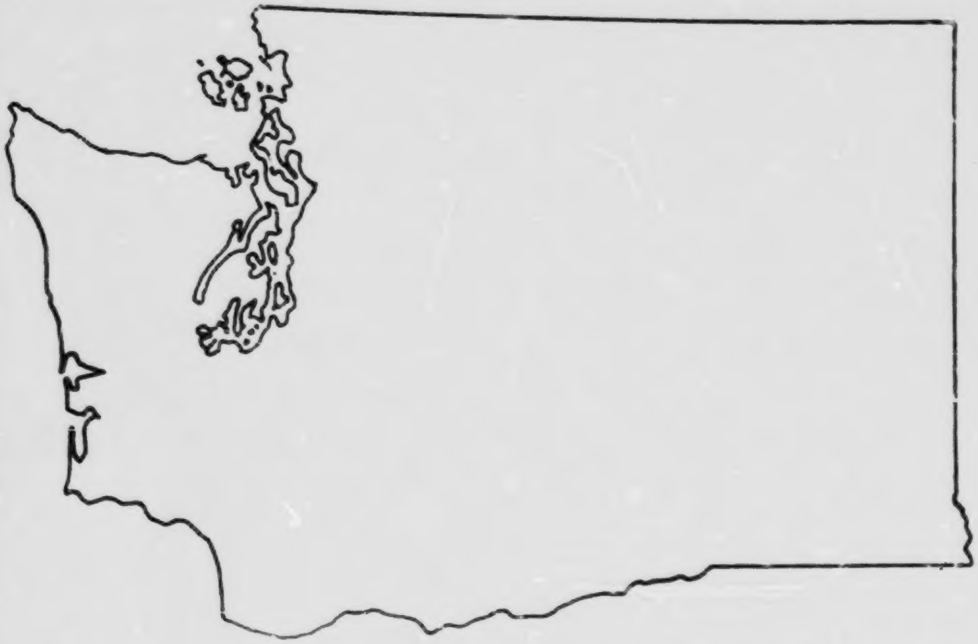

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-83-1
Prepared in cooperation with the State of Washington
and with other agencies

CALENDAR FOR WATER YEAR 1983

1982

OCTOBER

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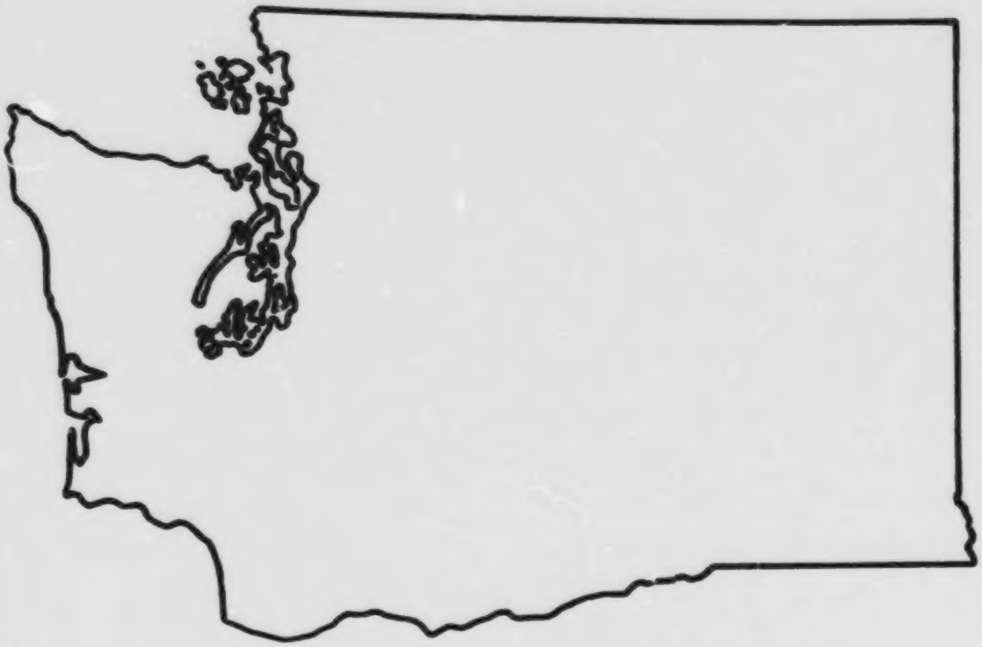
Water Resources Data
Washington
Water Year 1983



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-83-1
Prepared in cooperation with the State of Washington
and with other agencies

I

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

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Pacific Northwest District
U.S. Geological Survey
1201 Pacific Avenue, Suite 600
Tacoma, Washington 98402

1985

PREFACE

This volume of the annual Washington hydrologic data report is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report was prepared in cooperation with the State of Washington and with other agencies under the general supervision of Phillip J. Carpenter, Washington Office Chief, Leslie B. Laird, Pacific Northwest District Chief, and T. John Conomos, Western Region Regional Hydrologist.

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16. Abstract (Limit: 200 words)

Water resources data for the 1983 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of wells and springs. This report contains discharge records for 200 gaging stations; stage only records for 22 gaging stations; stage and contents for 22 lakes and reservoirs; water quality for 43 gaging stations; and water levels for 124 observation wells. Also included are data for 79 crest-stage partial-record stations. Locations of these sites are shown on figures 4, 5, 6, and 34. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Washington.

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Letter after station name designates type of data: (d) discharge; (e) elevation; (g) gage height; (v) contents; (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radiochemical where applicable; (t) water temperature; and (k) specific conductance.

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INTRODUCTION

Water resources data for the 1983 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of wells and springs. This report contains discharge records for 200 gaging stations; stage only records for 22 gaging stations; stage and contents for 22 lakes and reservoirs; water quality for 43 gaging stations; and water levels for 124 observation wells. Also included are data for 79 crest-stage partial-record stations. Locations of these sites are shown on figures 4, 5, 6, and 34. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Washington.

Records of discharge of streams and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a multiyear series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from the Branch of Distribution, U.S. Geological Survey, 1200 Eads Street, Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report on a State-boundary basis. These official Survey reports carry an identification number consisting of the two letter State abbreviation, the last two digits of the water year, and volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report WA-83-1." For archiving and general distribution, the reports for water years 1971-74 are also identified as water-data reports. These water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Additional information, including current prices, for ordering specific reports may be obtained from the office chief at the address given on the back of the title page or by telephone (206) 593-6510.

COOPERATION

The U.S. Geological Survey and organizations of the State of Washington have had cooperative agreements for the systematic collection of surface-water and water-quality records since 1909. Organizations that supplied data are acknowledged in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Washington State Department of Ecology, Donald W. Moos, director
Washington State Department of Fisheries, William R. Wilkerson, director
Washington State Department of Transportation, Duane Berentson, secretary
City of Seattle, Department of Lighting, J. P. Recchi, superintendent
Municipality of Metropolitan Seattle, Neil Peterson, executive director
City of Tacoma, Department of Public Utilities, P. J. Nolan, director
City of Tacoma, Department of Public Works, Ronald M. Button, director
City of Everett, Department of Utilities, Marvin C. Haglund, director
City of Everett, Department of Public Works, Hugh Warren, director
Chelan County, P.U.D. No. 1, Gerald L. Copp, manager
King County, Department of Public Works, Donald J. LaBelle, director
Lewis County, Department of Public Works, Verne Wagar, director
Quinault Tribal Council, Joseph B. DeLaCruz, Tribal chairman
Makah Tribal Council, Donald W. Johnson
Yakima Tribal Council, Johnson Meninick, chairman
Hoh Tribal Council, Mary K. Leitka, chairperson
Tulalip Tribal Council, Stanley G. Jones, chairman
Snohomish County Department of Public Works, Gerald E. Weed, director
Island County Board of Commissioners, Lou A. Romeo, chairman
Washington Public Power Supply System, Don Mazure, managing director
San Juan County Board of Commissioners, James Klauder, chairman
Puyallup Indian Tribe, Frank Wright, Jr., acting chairman

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 42 gaging stations; the U.S. Department of Energy, in collecting records for 2 water-quality stations; the Bureau of Reclamation, U.S. Department of Interior, in collecting records for 10 gaging stations; the U.S. Department of State, in collecting records for 15 gaging stations; the Bonneville Power Administration, in collecting records for 6 gaging stations; the Bureau of Indian Affairs, U.S. Department of Interior, in collecting records for 4 gaging stations; and the Federal Emergency Management Agency in collecting records for 5 gaging stations.

BEST [illegible] AVAILABLE

HYDROLOGIC CONDITIONS

Western Washington

The annual mean runoff in western Washington during the 1983 water year was generally close to normal. It ranged from a low of 83 percent of normal for the Cedar River to a high of about 118 percent of normal for the Chehalis, Naselle, Hoh, Cispus, and Elwha Rivers. Precipitation was generally above average during January, March, June, and July, below average during October, December, February, and September, and near average for the other months of the year.

Peak flows in western Washington generally had recurrence intervals ranging from 2 to 7 years although the Elwha and Hoh Rivers had peak-flow recurrence intervals ranging from 10 to 15 years. Monthly and annual mean discharges are compared with long-term medians at two gaging stations in figure 3. The Chehalis River, a lowland stream in the southern part of the region, had above normal runoff each month except in November, March, and May, and the annual runoff was 118 percent of normal. The Skykomish River, a mountainous stream of the northern Cascade Mountain Range, had annual runoff of 91 percent of normal, and monthly flows at or above normal except for October, April, May, and June.

The ground-water level in the key observation well in western Washington was above normal for each month of the year except September, when it was 2.6 feet below normal. For the previous 11 months, the range was from 1.3 feet to 10.3 feet above normal.

Storage in Lake Merwin was normal or above normal for the entire year as was that of Ross Reservoir, except when the reservoir was drawn to 92 and 78 percent of normal during April and May, respectively. Storage in Lake Cushman was below normal during fall and winter (as low as 53 percent of normal in November) but was back to normal or above normal during the spring and summer.

Eastern Washington

The annual mean runoff in eastern Washington during the 1983 water year was generally above normal. Above normal runoff occurred in the Spokane, Stehekin, and Wenatchee River basins. Runoff was 120 percent of normal in the Palouse and American River basins, and 155 percent of normal in the Kettle and Klickitat River basins. Precipitation in eastern Washington was generally average or above average for all months except November, April, May, and August which were below average.

Monthly and annual mean discharges are compared with long-term medians at two gaging stations in figure 3. Unadjusted flows for the Spokane River at Spokane, which is regulated by Coeur d'Alene Lake, were above normal during October, December, January, February, March, July, August, and September, and were below normal for the remaining five months, resulting in annual runoff that was near normal. Klickitat River flows were above normal for all months of the year, and the annual runoff was 150 percent of normal.

The ground-water level in the key observation well in eastern Washington was above average for all months of the year except October and June. The greatest departure from normal was in March at 6.9 feet above normal, and the greatest negative departure was 0.9 foot below normal in June.

Storage in Lake Chelan changed very little for the year while Franklin D. Roosevelt Lake decreased by 373,190 acre-feet. In the Yakima River basin, storage in Keechelus and Rimrock Lakes increased by 33,860 acre-feet while that at Kachess, Cle Elum, and Bumping Lakes decreased by 31,940 acre-feet.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System of Units (SI) on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multicelled plants containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that may be used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory, these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C + 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are a group of coliform bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C + 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C + 1.0°C on M-enterrococcus medium (nutient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Benthic organisms (invertebrates) are animals inhabiting the bottom of an aquatic environment. They include a number of different types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are frequently used as indicators of environmental quality because many have restricted mobility during their aquatic life phase, as well as a relatively long lifespan which allows for response to prevailing and changing water-quality conditions. Many benthic organisms inhabit specific types of environments which, if changed, result in changes in the composition of the benthic community.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, used for decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the weight per unit area or volume of habitat.

Ash weight is the weight or amount of residue present after the residue from the dry weight determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash weight values of zooplankton and phytoplankton are expressed as g/m^3 (grams per cubic meter), and periphyton and benthic organisms in g/m (grams per square meter).

Dry weight refers to the weight of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the weight remains unchanged. This weight represents the total organic matter, ash and sediment, in the sample. Dry weight values are expressed in the same units as ash weight.

Organic Mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet Mass is the mass of living matter plus contained water.

Bottom Material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day (ft^3/s-day) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons, or 2,445 cubic meters. It represents a runoff of approximately 0.0372 inch from 1 square mile or 0.3468 millimeter from 1 square kilometer.

Chemical oxygen demand (COD) indicates the quantity of oxidizable compounds in water and varies with water composition(s), temperature, period of contact, and other factors.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloro-platinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuing water-quality record station is a specified site which meets one or all conditions listed.

1. Where chemical samples are collected daily or monthly for 10 or more months during the water year.
2. Where water-temperature records include observations taken one or more times daily.
3. Where sediment discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, total fluids) that passes a given point within a given period of time.

Instantaneous discharge is the discharge at a given time.

Mean discharge is the arithmetic average of discharge during a specific period.

Dissolved refers to that material in a representative water sample which passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate. It is recognized that certain kinds of samples cannot be filtered; to provide for this, procedures that are considered equivalent to filtering through a 0.45-micrometer membrane filter will be identified and announced at a later date.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/l) is a unit expressing the concentration of chemical constituents in solution as weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/l) is a unit for expressing the concentrations of chemical constituents in solution. Milligrams per liter represent the weight of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/l, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Cells/volume refers to the number of cells of any organism which are counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, usually milliliters (ml) or liters (l).

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually millimeters (ml) or liters (l). Number of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined either by sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay..........	0.00024 - 0.004	Sedimentation.
Silt..........	.004 - .062	Sedimentation.
Sand..........	.062 - 2.0	Sedimentation or sieve.
Gravel........	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent of total is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, number, weight, or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While consisting primarily of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Plankton is the community of suspended, floating or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are primary food producers in the aquatic environment and are commonly known as algae.

Chlorophyta (green algae) have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats of floating "moss" in lakes.

Chrysophyta (yellow-green algae, yellow-brown algae, and diatoms) have pigments in which yellow-green to golden-brown algae predominate. The cell wall of these organisms, especially diatoms, often consists of two overlapping halves which are highly silicified.

Cryptophyta (cryptomonads) have pigments that are usually brown but also occur as red, blue, or grass green. The cells are motile with two flagella and occur in freshwaters sometimes rich in organic and in nitrogenous materials.

Cyanophyta (blue-green algae) are groups of phytoplankton organisms having blue pigment in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Euglenophyta (euglenoids) are motile cells usually with one flagella and have a dominant grass-green pigment. They often occur in small pools rich in organic matter and are frequently present in sufficient amounts to color the water or the damp mud along river banks.

Pyrrhophyta (fire algae) have greenish-tan to golden-brown pigments. The cells are motile usually with two flagella. The freshwater forms are more abundant in pools, ditches, and small lakes with considerable vegetation.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the food web. The zooplankton community is dominated by small crustaceans and rotifers.

Runoff in inches (IN.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintagrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is the quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetables, soil, or rocks that dissolves in water.

Specific conductance is a measure of the ability of water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplace samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with kingdom and ending with species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Emphemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that records water temperature in digital format on punched paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report, it is expressed in Formazin turbidity units (FTU), obtained from the Nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90 degrees from the path of an incident light source.

Water year in Geological Survey reports dealing with surface-water supply refers to the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1983 is called "1983 water year."

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the year after thorough mixing in the reservoir.

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used an an abbreviation for "Water-Resources Data" in reports published prior to 1976).

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBERS

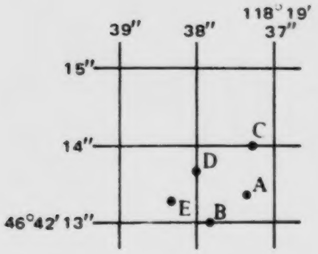
Stations are listed in downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of stations in the front of this report, the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of indentification, each water-quality station, gaging station, and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record and continuous-record stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 12041000 which appears just to the left of the station name, includes the 2-digit part number "12" plus the 6-digit downstream order number "041000." In this report, the records are listed in downstream order by parts. The part number refers to an area whose boundaries coincide with certain natural drainage lines. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1.



Coordinates for miscellaneous site A (464213118193701) and miscellaneous site B (464213118193702)

Coordinates for miscellaneous site C (464214118193701)

Coordinates for wells D (464213118193801) and E (464213118193802)

Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

Local identifier well-numbering system

Local identifier well numbers used by the Geological Survey in the State of Washington are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. (Because all townships in Washington are north of the Willamette base line the letter "N", indicating north is omitted; and because most of the State is east of the Willamette meridian the letter "E" is sometimes omitted for those ranges east of the Willamette meridian, but "W" is always included when the range lies west of the Willamette meridian). The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in NW¼SW¼ sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2. See figure 2.

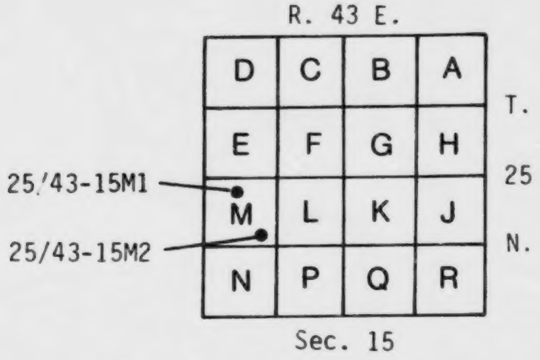


Figure 2. Local identifier well numbering system.

SPECIAL NETWORKS AND PROGRAMS

Some of the stations for which data are published in this report are included in special networks and programs. These stations are identified by their title, set in parentheses, under the station name.

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is an accounting network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of water-quality conditions nationwide on a year-to-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where additional samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Since the first application of DDT as an insecticide in the early 1930's, there have been almost 60,000 pesticide formulations registered, each containing at least one of the approximately 800 different basic pesticide compounds. The United States annually produces about 1 billion pounds. Chlorinated hydrocarbon pesticides are still commonly used in many areas of the country, although efforts are being made to replace many of them with more specific, fast-acting, and easily degradable compounds.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected monthly or twice a year (at high and low flow) to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Radioisotopes are isotope forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus. For example: Ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, with the natural mixture having atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron (Rose, 1966). There are 275 isotopes of the 81 stable elements in addition to more than 800 radioactive isotopes.

Radioisotopes that are determined in this program are natural uranium in ug/l (micrograms per liter), radium as radium-226 in PC/L (pCi/l, picocuries per liter), gross beta radiation as equivalent strontium/yttrium-90 or cesium-137 in PC/L, and gross alpha radiation as micrograms of uranium equivalent per liter (ug/l). Gross alpha and beta radioactivity associated with the fine-grained (silt- and clay-sized) sediments in the samples are also determined.

A picocurie (PC, pCi) is one trillionth (1 x 10-12) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7 x 1010 radioactive disintegrations per second. A picocurie yields 2.2 dpm (disintegrations per minute).

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder which gives a continuous graph of the fluctuations (for digital recorders, a tape punched at 15-, 30-, or 60-minute intervals) or from direct readings on a nonrecording gage. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks on the measurement of stream discharge. Surface areas of lakes or reservoirs are determined from instrument surveys using standard methods.

For a stream-gaging station, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage heights to the rating table gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations, the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other causes. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in determining discharge. Information required for determining the slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations, the stage-discharge relation is affected by changing stage; at these stations, the rate of change in stage is used as a factor in determining discharge.

At some stream-gaging stations, the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. Discharge over spillways is computed from a stage-discharge relation curve defined by discharge measurements. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations, there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of recorded range in stage, good record at adjoining stations, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated on the basis of operator's log, good record at adjoining stations, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of hydrologic data. For gaging stations on streams or canals, a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs, a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gage, general remarks, average discharge, and extremes of published records. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published, along with the current records, in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years, only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are affected by the revision, that fact is brought out by notations after the year dates as follows: "(M)" means only the instantaneous maximum discharge was revised; "(m)" only the instantaneous minimum was revised; and "(P)" only the peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in the "DEFINITION OF TERMS" section.

Information pertaining to the accuracy of the discharge records, and to conditions that affect the natural flow at the gaging station, is given under "REMARKS"; for reservoir stations, information on the dam forming the reservoir, the capacity, outlet works and spillway and purpose and use of the reservoir is also given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations, peak discharges are listed with the time of occurrence and corresponding gage heights with "EXTREMES FOR THE CURRENT YEAR," if they are all independent peaks (including the maximum for the year) above the selected base. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following "EXTREMES," for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to tables of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs, the data presented comprise a description of the station and monthly summary table of stage and contents. For some reservoirs, a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but it is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in a table of annual maximum stage and discharge at crest-stage stations. The table of partial-record stations is followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of data

The accuracy of discharge data depends primarily on (1) the stability of the stage-discharge relation or, the stability of the control, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent, "good" within 10 percent, and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge are shown to the nearest hundreth of a cubic foot per second for discharges of less than 1 ft^3/s, to tenths between 1.0 and 10 ft^3/s, to whole numbers between 10 and 1,000 ft^3/s, and to three significant figures greater than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumptive use, regulation, evaporation, or other factors. For such stations, discharge in cubic feet per second per square mile and runoff in inches are not published unless satisfacory adjustments can be made for such effects. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or unadjusted losses (consumptive use, evaporation, seepage, etc.) are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the Washington office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the Washington office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Records of surface-water quality are listed in downstream order by station number. The data generally are collected at or near gaging stations, and are reported immediately following other records for those stations. Water-quality data for most ungaged sites are listed with the records for other surface-water stations, in regular downstream order. The exceptions are the less detailed data for several ungaged sites, which are grouped separately in the section titled "Analyses of samples collected at water-quality partial-record stations."

The descriptive headings for detailed records of surface-water quality give periods of record for the various categories of data, extremes for certain pertinent data, and general remarks. For less detailed records, only the overall period of record is listed.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses.

Water analysis

Most methods for collecting and analyzing water samples are described in the section entitled, "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS."

One stream-water sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample for the accurate determination of mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. Where an apparent inconsistency exists between a reported pH value and relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the published records consist of daily maximum, minimum, and mean values. More detailed records may be obtained from the Washington office.

Since October 1967, the U.S. Geological Survey has used the metric system for reporting data on chemical constituents and concentrations of suspended sediment. Chemical constituents are now reported in milligrams per liter (mg/l) except for certain minor elements that are reported in micrograms per liter (ug/l). Suspended sediment is reported in milligrams per liter and water temperatures in degrees Celsius (°C). In water with a density other than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per liter.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per liter instead of milligrams per liter. (See "DEFINITION OF TERMS.")

Water temperature

Water temperatures are measured at most of the water-quality stations. The water temperatures for daily stations are taken when a sample is collected, at about the same time each day. Large streams have small diurnal temperature changes; shallow streams may have a daily range of several degrees and may closely follow the changes in air temperature. Some streams may be affected by waste-heat discharges. At stations where continuously recording thermographs are used, maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section or a single sample at a fixed point and a coefficient applied to determine concentration in the cross sections.

During periods of rapidly changing flow or concentration, samples may have been collected twice daily or, in some instances, hourly. The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment discharges observed for other periods of similar discharge. A blank in the daily mean concentration column of the suspended-sediment discharge table indicates the value in the sediment discharge column was estimated.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions at the times of observations only, such data are useful in establishing seasonal relations between quality and streamflow for predicting long-term sediment-discharge characteristics of the stream.

In addition to records of the quantities of suspended sediment, records of periodic measurements of particle-size distribution of suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figures 1 and 2.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures; hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet below land-surface datum unless otherwise indicated. Those water levels that are above land-surface datum are preceded by a plus (+) sign. Land-surface datum is a datum plane that is approximately at land surface at each well. The height of the measuring point (MP) above or below land-surface datum is given in each well description.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

ACCESS TO WATSTORE DATA

The National WATer Data STOrage and REtrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requestor. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
MS 437 National Center
Reston, Virginia 22092

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Forty-three manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett Street, Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. WATER TEMPERATURE-INFLUENTIAL FACTORS, FIELD MEASUREMENT, AND DATA PRESENTATION, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI, Book 1, Chapter D1. 1975. 65 pages.
1-D2. GUIDELINES FOR COLLECTION AND FIELD ANALYSIS OF GROUND-WATER SAMPLES FOR SELECTED UNSTABLE CONSTITUENTS, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
2-D1. APPLICATION OF SURFACE GEOPHYSICS TO GROUND-WATER INVESTIGATIONS, by A. A. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
2-E1. APPLICATION OF BOREHOLE GEOPHYSICS TO WATER-RESOURCES INVESTIGATIONS, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
3-A1. GENERAL FIELD AND OFFICE PROCEDURES FOR INDIRECT DISCHARGE MEASUREMENTS, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
3-A2. MEASUREMENT OF PEAK DISCHARGE BY THE SLOPE-AREA METHOD, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
3-A3. MEASUREMENT OF PEAK DISCHARGE AT CULVERTS BY INDIRECT METHODS, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
3-A4. MEASUREMENT OF PEAK DISCHARGE AT WIDTH CONTRACTIONS BY INDIRECT METHODS, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
3-A5. MEASUREMENT OF PEAK DISCHARGE AT DAMS BY INDIRECT METHODS, by Harry Hulsing: USGS-TWRI Book 3, Chapter A5. 1967. 29 pages.
3-A6. GENERAL PROCEDURE FOR GAGING STREAMS, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6, 1968. 13 pages.
3-A7. STAGE MEASUREMENTS AT GAGING STATIONS, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
3-A8. DISCHARGE MEASUREMENTS AT GAGING STATIONS, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

3-A9. MEASUREMENT OF TIME OF TRAVEL AND DISPERSION IN STREAMS BY DYE TRACING, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.

3-A11. MEASUREMENT OF DISCHARGE BY MOVING-BOAT METHOD, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

3-A12. FLUOROMETRIC PROCEDURES FOR DYE TRACING, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. Not currently available.

3-A13. COMPUTATION OF CONTINUOUS RECORDS OF STREAMFLOW, by E. J. Kennedy: USGS--TWRI Book 3, Cahpter A13. 1983. 53 p.

3-A14. USE OF FLUMES IN MEASURING DISCHARGE, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 p.

3-B1. AQUIFER-TEST DESIGN, OBSERVATION, AND DATA ANALYSIS, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

3-B2. INTRODUCTION TO GROUND-WATER HYDRAULICS, A PROGRAMED TEXT FOR SELF-INSTRUCTION, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.

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3-C2. FIELD METHODS FOR MEASUREMENT OF FLUVIAL SEDIMENT, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.

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4-B1. LOW-FLOW INVESTIGATIONS, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

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4-B3. REGIONAL ANALYSES OF STREAMFLOW CHARACTERISTICS, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.

4-D1. COMPUTATION OF RATE AND VOLUME OF STREAM DEPLETION BY WELLS, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.

5-A1. METHODS FOR DETERMINATION OF INORGANIC SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.

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5-A4. METHODS FOR COLLECTION AND ANALYSIS OF AQUATIC BIOLOGICAL AND MICROBIOLOGICAL SAMPLES, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

5-A5. METHODS FOR DETERMINATION OF RADIOACTIVE SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

5-A6. QUALITY ASSURANCE PRACTICES FOR THE CHEMICAL AND BIOLOGICAL ANALYSES OF WATER AND FLUVIAL SEDIMENTS, by L. C. Friedman and D. E. Erdmann. 1982. 181 pages.

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7-C1. FINITE DIFFERENCE MODEL FOR AQUIFER SIMULATION IN TWO DIMENSIONS WITH RESULTS OF NUMERICAL EXPERIMENTS, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. COMPUTER MODEL OF TWO-DIMENSIONAL SOLUTE TRANSPORT AND DISPERSION IN GROUND WATER, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

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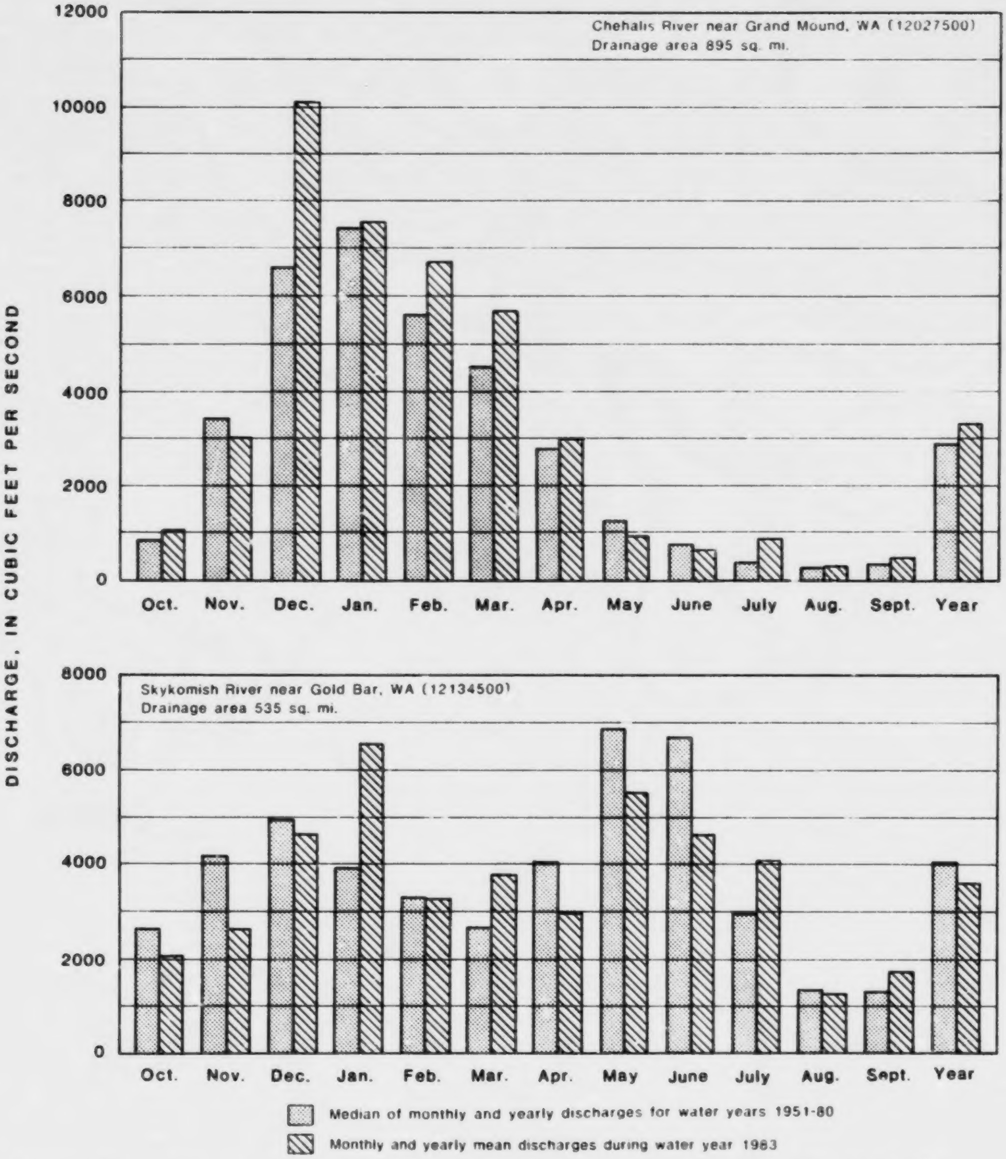


Figure 3a.—Discharge during 1983 water year compared with median discharge for period 1951-80 for two representative gaging stations in Western Washington.

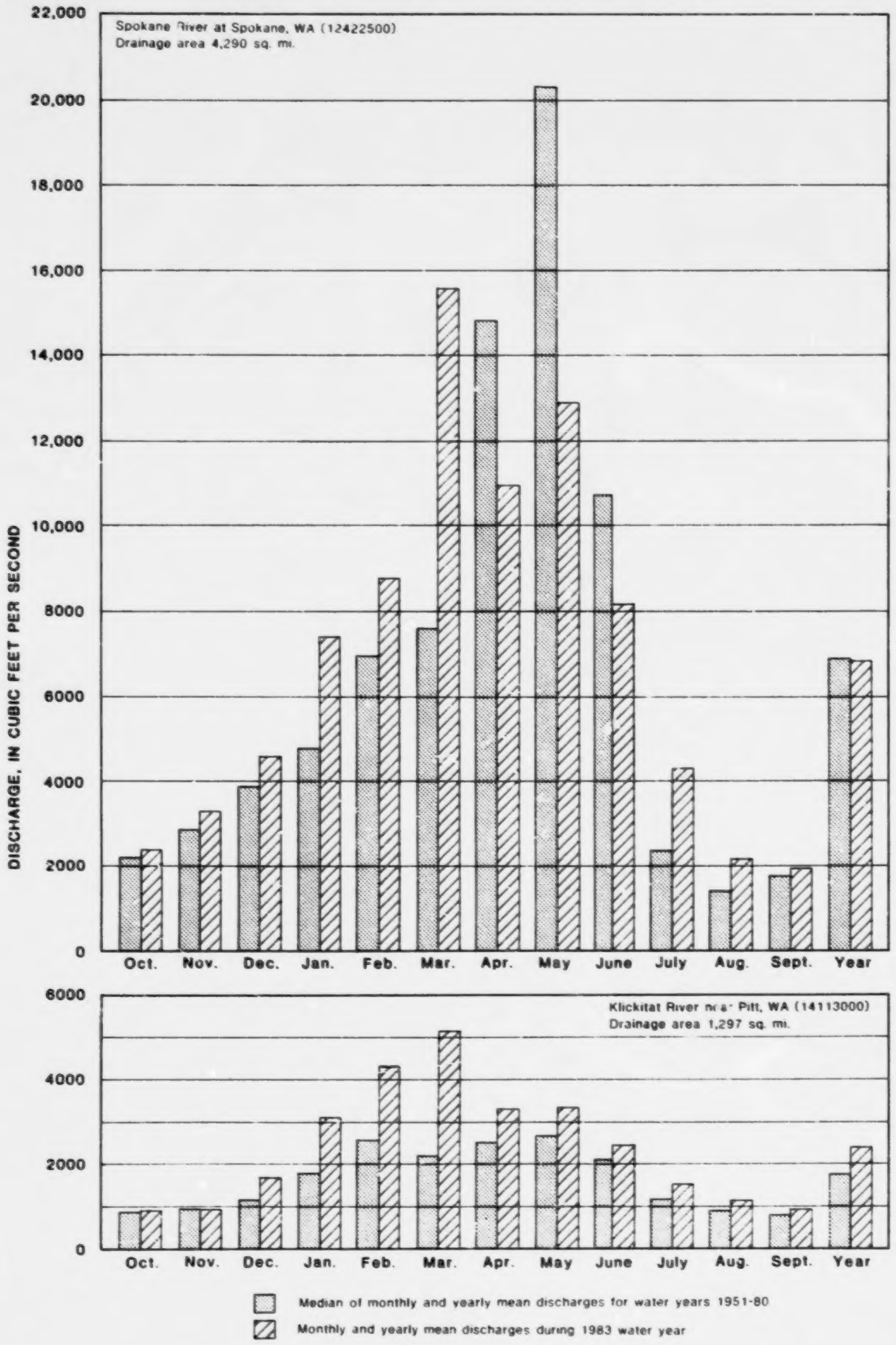


Figure 3b.—Discharge during 1983 water year compared with median discharge for period 1951-80 for two representative gaging stations in Eastern Washington.

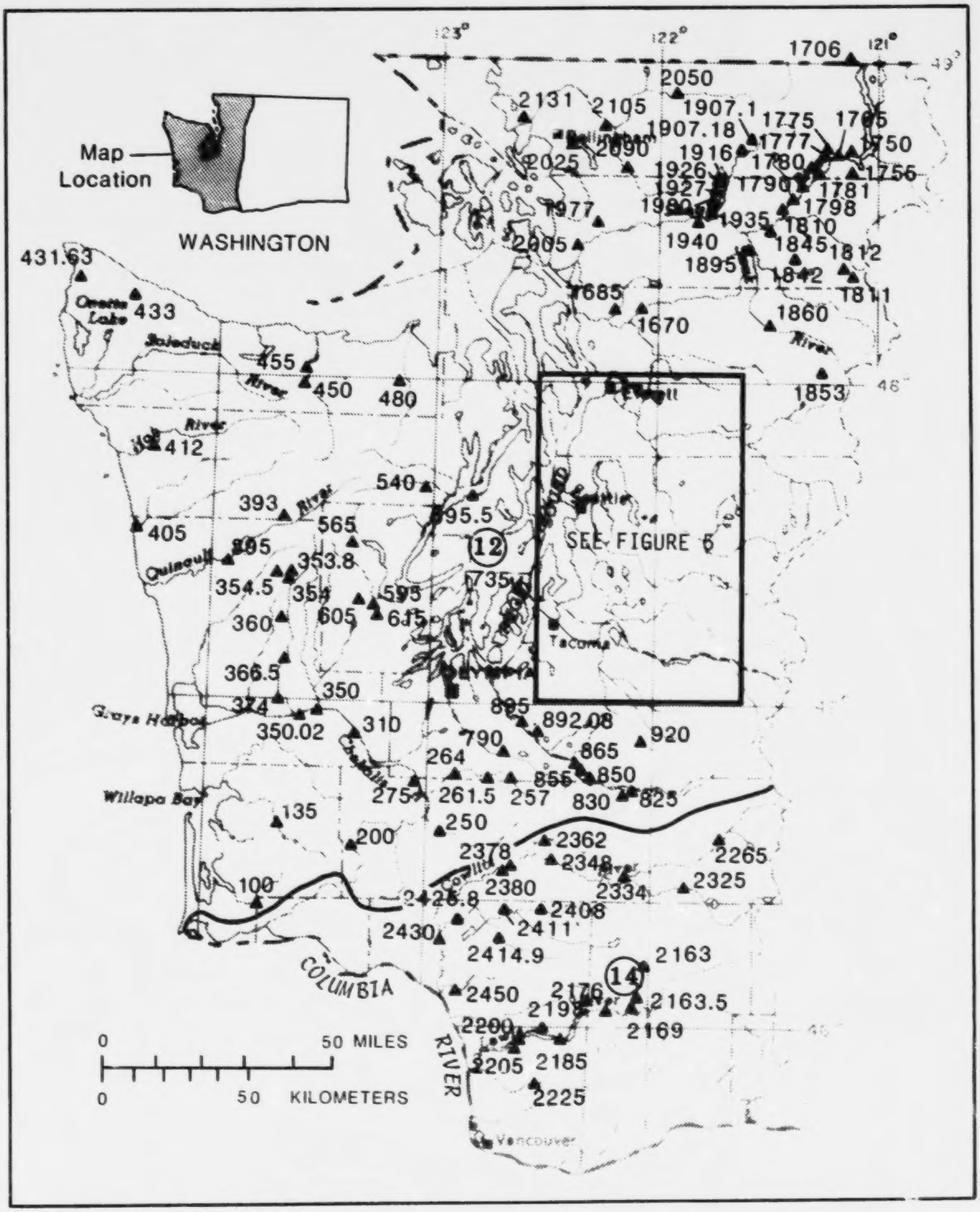

Map Location
WASHINGTON
123°
122°
121°
49°
48°
47°
46°
1706
2050
2131
2105
1907.1
1907.18
1775
1765
1777
1750
1916
1780
1756
2025
2090
1926
1927
1790
1781
1798
1977
1930
1935
1810
2005
1940
1845
1812
1895
1842
1811
1685
1670
1860
1853
431.63
Ozette Lake
433
Soleduck
455
450
480
River
412
540
393
River
895.5
405
565
12
SEE FIGURE 5
Quinault
395
353.8
354.5
354
595
605
615
735
360
Seattle
Tacoma
366.5
350
374
Grays Harbor
350.02
310
895
892.08
920
790
865
264
856
850
Chehalis
275
261.5
257
830
825
Willapa Bay
135
250
200
2362
2265
2378
2348
Cowlitz
River
2334
2325
100
2380
2426.8
2408
2430
2411
2414.9
2163
COLUMBIA
14
2450
2176
2163.5
2198
2169
2200
2205
2185
2225
RIVER
Vancouver
0
50 MILES
0
50 KILOMETERS

Figure 4a.—Map of Western Washington showing locations of gaging stations. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.

BEST COPY AVAILABLE

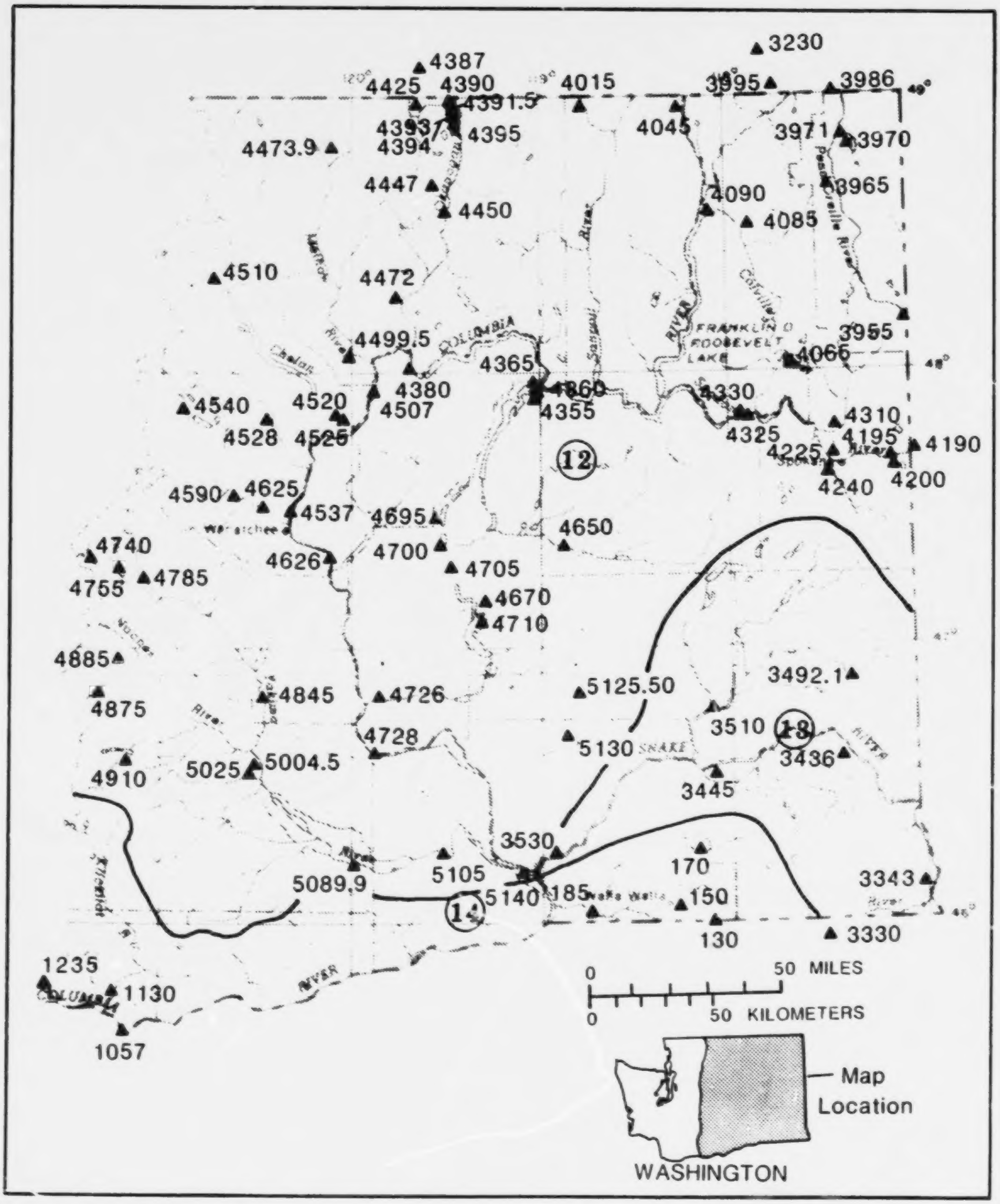
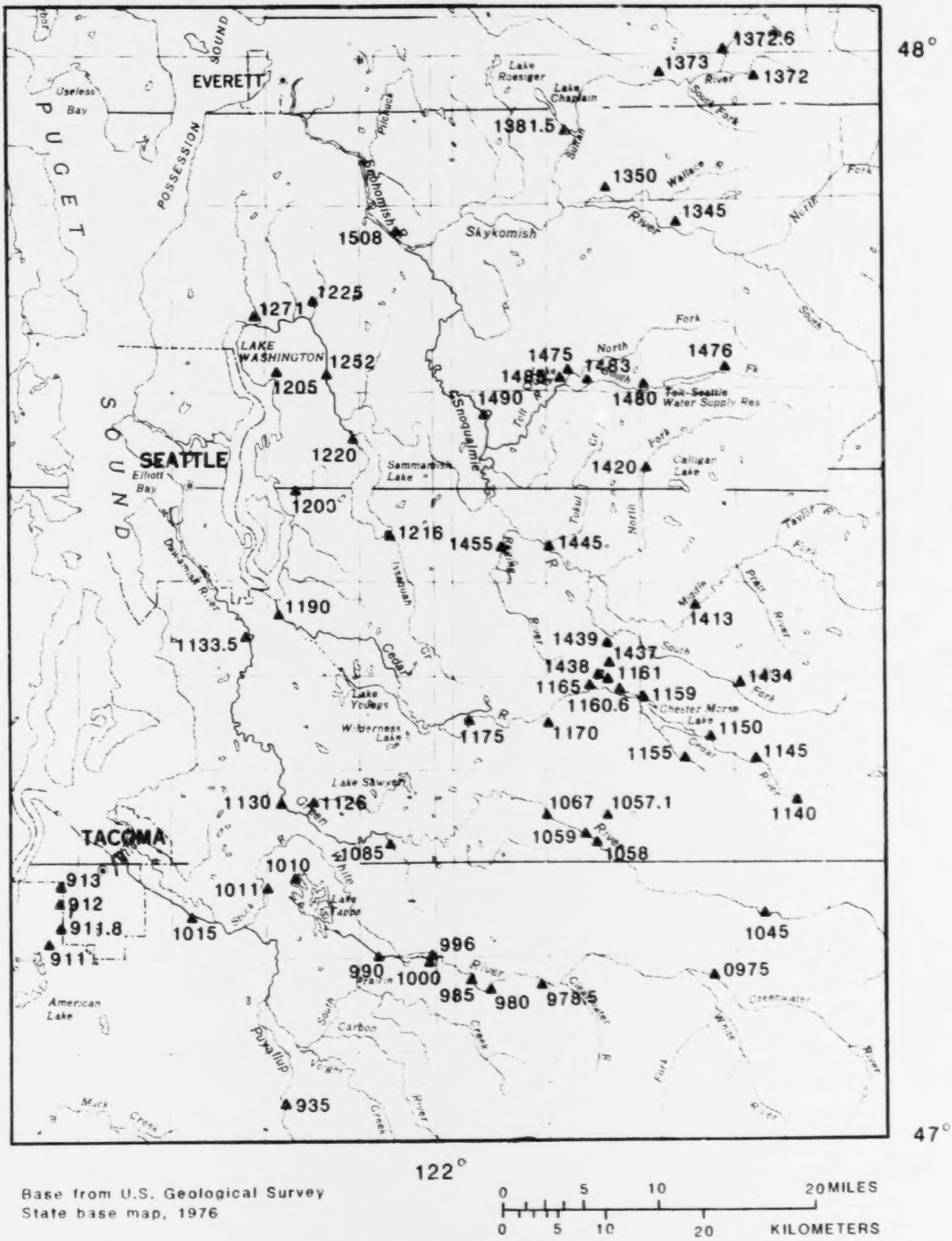

4387
3230
4425
4390
4391.5
4015
3995
3986
4393
4394
4395
4473.9
4045
3971
3970
4447
4450
4090
4085
3965
4510
4472
COLUMBIA
Chelan
FRANKLIN D ROOSEVELT LAKE
3955
4499.5
4066
4365
4380
4360
4540
4520
4507
4355
4330
4528
4525
4325
4310
4195
4190
12
4225
4240
4200
4590
4625
4537
4695
Wenatchee
4650
4740
4626
4700
4705
4755
4785
4670
4710
4885
3492.1
4875
4845
4726
5125.50
3510
18
4728
5130
SNAKE
3436
4910
5025
5004.5
3445
3530
170
5105
3343
5089.9
5140
185
150
14
Walla Walla
130
3330
1235
1130
COLUMBIA RIVER
1057
0
50 MILES
0
50 KILOMETERS
Map Location
WASHINGTON

Figure 4b.—Map of Eastern Washington showing locations of gaging stations. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.


48°
47°
122°
EVERETT
SEATTLE
TACOMA
PUGET SOUND
POSSESSION SOUND
Useless Bay
Elliott Bay
LAKE WASHINGTON
Lake Roesiger
Lake Chaplain
Sammamish Lake
Lake Youngs
Wilderness Lake
Lake Sawyer
Lake Tapps
American Lake
Calligan Lake
Chester Morse Lake
Tolt-Seattle Water Supply Res
Snohomish R
Skykomish
Pilchuck
Sultan
Wallace R
River
South Fork
North Fork
Snoqualmie
Tolt
Tokul Cr
Issaquah Cr
Cedar R
Duwamish R
Green River
White
Stuck
Puyallup
South Carbon
Greenwater
Middle Fork
Pratt River
Taylor R
Muck Creek
1372.6
1373
1372
1381.5
1350
1345
1508
1225
1271
1252
1205
1220
1200
1475
1488
1483
1476
1490
1480
1420
1216
1455
1445
1190
1133.5
1413
1439
1437
1438
1161
1165
1159
1160.6
1434
1175
1170
1150
1155
1145
1130
1126
1067
1057.1
1140
1059
1058
1085
1010
1011
913
912
911.8
911
1015
1045
996
990
1000
985
980
978.5
0975
935
0 5 10 20 MILES
0 5 10 20 KILOMETERS

Base from U.S. Geological Survey
State base map, 1976

Figure 5.—Map showing locations of gaging stations in the insert of Figure 4a.

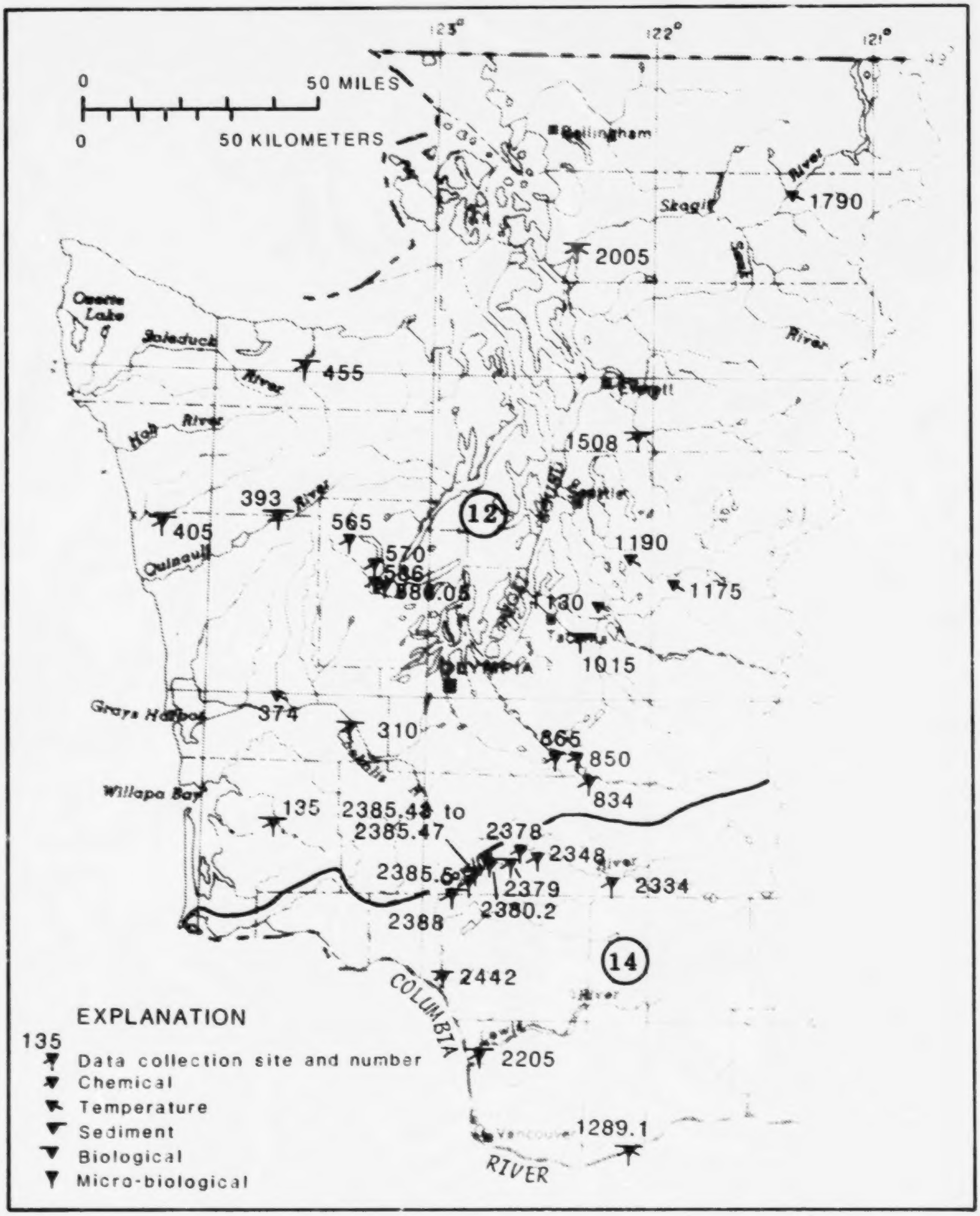

123°
122°
121°
0
50 MILES
0
50 KILOMETERS
Bellingham
Skagit
River
1790
2005
Ozette Lake
Soleduck
River
455
River
Everett
Hoh
River
1508
393
River
405
Quinault
565
570
586
12
Seattle
1190
1175
586.05
130
Tacoma
1015
Olympia
Grays Harbor
374
310
865
850
834
Willapa Bay
135
2385.43 to
2385.47
2378
2348
River
2385.5
2379
2334
2388
2380.2
14
2442
COLUMBIA
River
Lewis
2205
Vancouver
1289.1
RIVER
EXPLANATION
135
Data collection site and number
Chemical
Temperature
Sediment
Biological
Micro-biological

Figure 6a.—Map of Western Washington showing locations of surface-water-quality sampling stations. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

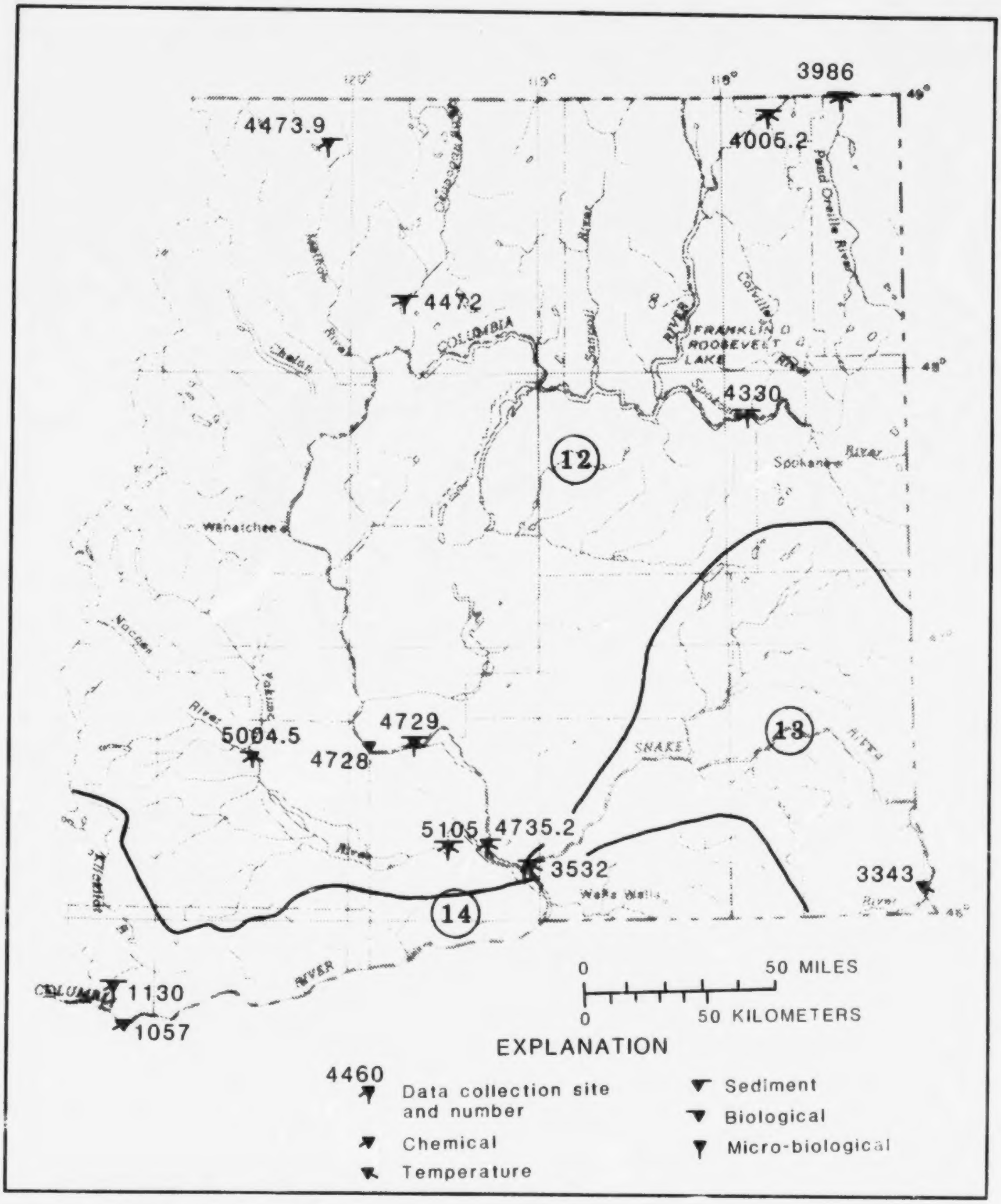

120°
119°
118°
49°
48°
46°
3986
4005.2
4473.9
4472
COLUMBIA
Pend Oreille River
Colville
River
FRANKLIN D ROOSEVELT LAKE
4330
Spokane
Spokane River
12
Wenatchee
13
SNAKE
RIVER
4729
5004.5
4728
Yakima
River
Naches
5105
4735.2
3532
Walla Walla
3343
River
14
Klickitat
COLUMBIA
RIVER
1130
1057
0
50 MILES
0
50 KILOMETERS
EXPLANATION
4460
Data collection site and number
Chemical
Temperature
Sediment
Biological
Micro-biological

Figure 6b.—Map of Eastern Washington showing locations of surface-water-quality sampling stations. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW¼SW¼ sec.1, T.10 N., R.9 W., Pacific County. Hydrologic Unit 17100106, on right bank 0.1 mi upstream from county highway bridge, 2.2 mi upstream from Salmon Creek, 3.4 mi east of Naselle, and at mile 17.4.

DRAINAGE AREA.--54.8 mi².

PERIOD OF RECORD.--May 1929 to current year. Chemical analyses October 1965 to September 1970, January to September 1973, November 1975 to June 1980. Water temperatures August 1963 to September 1973.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

GAGE.--Water-stage recorder. Altitude of gage is 24 ft, by barometer. Prior to Jan. 11, 1957, nonrecording gage and crest-stage gage at site 1,350 ft downstream at present datum. Jan. 11, 1957, to Dec. 31, 1961, nonrecording gage and crest-stage gage at site 1,200 ft downstream at present datum.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years, 432 ft³/s, 107.05 in/yr, 313,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s, Jan. 22, 1935, from flood marks at site then in use, from rating curve extended above 4,000 ft³/s on basis of slope-area measurement at gage height 15.2 ft; maximum gage height, 16.20 ft Dec. 2, 1977; minimum discharge, 18 ft³/s Aug. 30, 31, Sept. 1, 1970, Sept. 3, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 29	0100	4,680	11.97	Jan. 5	1200	4,230	11.33
Dec. 3	2000	*6,500	*14.10	Mar. 29	1500	4,760	12.08
Dec. 15	2400	4,290	11.41				

Minimum discharge, 34 ft³/s Oct. 5, 6, gage height, 3.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	561	2360	264	421	503	1080	128	104	238	109	67
2	40	440	1560	264	366	453	1030	133	107	312	105	92
3	44	378	4090	312	324	405	917	128	98	260	102	78
4	39	507	3460	758	289	359	752	122	90	225	97	71
5	36	758	1650	2990	260	339	615	116	87	197	92	66
6	100	945	1050	2030	293	378	512	113	85	177	88	61
7	166	829	752	2930	320	570	440	161	81	170	84	59
8	157	665	595	3130	297	1220	378	289	78	185	81	61
9	163	525	498	1990	851	3070	355	316	84	172	79	59
10	124	428	428	1850	1220	1880	374	281	148	155	78	150
11	102	362	374	1460	2180	1200	362	235	139	146	88	190
12	87	316	366	1030	2250	989	331	205	118	210	81	122
13	76	278	351	780	2090	906	304	185	104	780	74	98
14	70	244	972	610	1440	879	274	185	95	670	71	90
15	65	223	2360	503	1170	818	250	220	115	543	68	82
16	68	610	3130	432	1210	695	229	190	104	436	66	79
17	98	1400	2040	382	2180	585	215	175	111	360	65	75
18	87	1000	1790	362	1830	489	200	170	226	302	63	104
19	72	895	1440	347	1220	424	187	157	271	274	62	105
20	67	807	1200	370	1140	374	177	150	210	241	59	84
21	97	690	994	339	978	335	170	141	172	212	58	76
22	660	570	994	324	1470	304	163	135	152	192	57	72
23	343	480	840	397	2210	362	175	126	146	177	57	70
24	229	413	695	494	1680	304	195	120	157	166	57	67
25	195	362	600	580	1140	271	161	116	170	157	55	66
26	293	320	525	956	895	250	177	111	146	148	53	65
27	289	355	449	1260	705	285	159	107	135	152	52	66
28	813	923	397	1020	580	516	148	102	126	141	71	61
29	2610	989	359	758	---	3340	141	93	130	126	116	58
30	989	2030	320	610	---	2380	135	98	139	118	85	57
31	670	---	289	494	---	1470	---	115	---	111	72	---
TOTAL	8885	19303	36928	30026	31009	26353	10606	4928	3928	7751	2345	2451
MEAN	287	643	1191	969	1107	850	354	159	131	250	75.6	81.7
MAX	2610	2030	4090	3130	2250	3340	1080	316	271	780	116	190
MIN	36	223	289	264	260	250	135	98	78	111	52	57
CFSM	5.24	11.7	21.7	17.7	20.2	15.5	6.46	2.90	2.39	4.56	1.38	1.49
IN.	6.03	13.10	25.07	20.38	21.05	17.89	7.20	3.35	2.67	5.26	1.59	1.66
AC-FT	17620	38290	73250	59560	61510	52270	21040	9770	7790	15370	4650	4860

CAL YR 1982 TOTAL 184495 MEAN 505 MAX 6030 MIN 18 CFSM 9.22 IN. 125.24 AC-FT 365900
WTR YR 1983 TOTAL 184513 MEAN 506 MAX 4090 MIN 36 CFSM 9.23 IN. 125.25 AC-FT 366000

12013500 WILLAPA RIVER NEAR WILLAPA, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°39'04", long 123°39'05", in SW¼SW¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft downstream from Mill Creek, 1.8 mi southeast of Willapa, and at mile 17.8.

DRAINAGE AREA.--130 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1947, July 1948 to December 1954, water years 1955-56, 1958-59 (annual maximum), April 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.57 ft National Geodetic Vertical Datum of 1929. Aug. 26 to Oct. 16, 1947, water-stage recorder at site 2,060 ft upstream at different datum. July 28, 1948, to Dec. 2, 1954, water-stage recorder, water years 1955-56, 1958-59, nonrecording gage, and Apr. 1, 1961, to Apr. 14, 1974, water-stage recorder at site 2,000 ft upstream at datum 2.12 ft higher.

REMARKS.--Water-discharge records good except those for periods of no gage-height record Oct. 29 to Nov. 16, Dec. 4-15, Jan. 12-26, and Jan. 29 to Feb. 2, which are fair. Some diversion for domestic use and irrigation above station. No regulation.

AVERAGE DISCHARGE.--28 years (water years 1949-1954, 1962-1983), 654 ft³/s, 68.32 in/yr, 473,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s Feb. 22, 1949, Dec. 13, 1966, from rating curve extended above 7,300 ft³/s; maximum gage height, 24.22 ft Feb. 22, 1949, site and datum then in use; minimum discharge, 13 ft³/s Aug. 20, 1967; minimum gage height, 2.87 ft Aug. 18-21, 23-25, 31, Sept. 1, 1970, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 29	0400	5,170	15.23	Jan. 5	1600	6,120	16.60
Dec. 4	0300	*9,040	*20.77	Mar. 29	2000	5,780	16.11
Dec. 16	0600	8,170	19.53				

Minimum discharge, 32 ft³/s Oct. 1-5, gage height, 3.21 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	500	3570	457	770	826	1710	212	135	156	99	69
2	32	400	2350	442	640	815	1760	210	129	247	97	93
3	32	350	5550	497	567	714	1690	205	128	191	94	94
4	32	380	7000	951	512	641	1380	197	116	162	89	76
5	32	580	2600	4300	466	604	1130	185	108	142	83	69
6	56	920	1900	3110	491	650	930	177	107	128	80	63
7	189	860	1200	3540	580	923	797	238	100	129	75	61
8	135	680	960	4290	491	1490	682	395	94	156	73	61
9	124	530	810	2910	1440	3760	617	418	94	136	71	61
10	99	440	700	2550	2010	2830	629	387	147	121	67	94
11	79	390	630	2030	3040	1890	601	325	167	113	73	197
12	66	350	620	1600	3360	1590	564	289	138	143	77	118
13	58	310	600	1200	3510	1480	506	261	119	517	68	90
14	53	285	1100	950	2300	1580	463	247	108	592	63	80
15	49	270	3500	840	1730	1470	431	302	126	485	61	75
16	47	590	6770	740	1760	1240	400	254	119	364	57	69
17	89	1780	3910	670	2930	1020	377	234	124	298	55	67
18	96	1320	3600	630	2700	860	348	220	229	252	53	87
19	73	1330	3100	620	1910	734	323	201	340	223	52	131
20	63	1340	2380	640	1730	641	305	189	254	214	52	90
21	63	1100	1900	590	1450	567	289	181	193	187	50	77
22	727	846	2010	580	1640	518	275	171	162	165	48	69
23	475	685	1540	700	2460	577	305	164	149	152	48	66
24	282	574	1320	850	2270	509	387	152	152	143	48	62
25	212	488	1110	1000	1680	450	302	145	162	136	48	60
26	383	424	938	1650	1370	421	293	138	142	133	47	58
27	455	439	794	2300	1110	472	272	133	128	129	45	57
28	829	1330	692	1840	930	685	252	128	119	135	46	56
29	3000	1470	617	1400	---	3790	238	119	119	119	76	53
30	1100	2860	550	1100	---	3530	225	115	126	110	94	50
31	600	---	499	900	---	2220	---	136	---	102	82	---
TOTAL	9562	23821	64920	45877	45847	39497	18481	6728	4334	6280	2071	2353
MEAN	308	794	2094	1480	1637	1274	616	217	144	203	66.8	78.4
MAX	3000	2860	7000	4300	3510	3790	1760	418	340	592	99	197
MIN	32	270	499	442	466	421	225	115	94	102	45	50
CFSM	2.37	6.11	16.1	11.4	12.6	9.80	4.74	1.67	1.11	1.56	.51	.60
IN.	2.74	6.82	18.58	13.13	13.12	11.30	5.29	1.93	1.24	1.80	.59	.67
AC-FT	18970	47250	128800	91000	90940	78340	36660	13340	8600	12460	4110	4670

CAL YR 1982 TOTAL 290805 MEAN 797 MAX 7600 MIN 17 CFSM 6.13 IN. 83.21 AC-FT 576800
WTR YR 1983 TOTAL 269771 MEAN 739 MAX 7000 MIN 32 CFSM 5.68 IN. 77.20 AC-FT 535100

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965-1973, 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
NOV , 1982											
16...	1300	460	65	E7.6	7.0	3.0	11.5	96	550	K1500	17
FEB , 1983											
02...	1230	622	60	7.6	6.5	2.2	11.1	90	23	21	15
MAY											
24...	1100	145	62	7.7	16.5	1.6	9.8	100	270	64	17
AUG											
16...	1130	58	71	7.8	18.0	1.9	9.4	99	270	--	20

DATE	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
NOV , 1982											
16...	0	4.5	1.5	5.2	38	.6	.70	20	7.0	5.0	<.10
FEB , 1983											
02...	0	4.0	1.3	5.0	41	.6	.50	17	5.0	4.6	<.10
MAY											
24...	0	4.4	1.4	5.2	39	.6	.80	21	5.0	4.6	<.10
AUG											
16...	0	5.1	1.7	6.0	39	.6	.70	26	5.1	5.3	<.10

DATE	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1982											
16...	13	48	49	.07	60	.69	.120	.40	.030	.010	.010
FEB , 1983											
02...	13	49	44	.07	82	1.1	<.060	.40	.040	<.010	<.010
MAY											
24...	13	41	47	.05	16	.29	.090	.50	.010	<.010	.010
AUG											
16...	14	50	54	.07	7.8	.18	.110	.60	.050	.040	<.010

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV , 1982											
16...	30	1	10	.8	<1	<1	<3	6	140	2	5
FEB , 1983											
02...	10	<1	7	<.5	<1	<1	<3	4	67	<1	7
MAY											
24...	20	<1	10	<.5	<1	<1	<3	2	110	4	<4
AUG											
16...	30	<1	8	<.5	<1	<1	<3	9	230	2	<4

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1982											
16...	25	.4	<10	2	<1	<1	29	<6	24	12	15
FEB , 1983											
02...	13	.1	<10	1	<1	<1	26	<6	11	9	15
MAY											
24...	10	<.1	<10	3	<1	<1	28	<6	13	3	1.2
AUG											
16...	12	<.1	<10	2	<1	<1	34	<6	17	12	1.9

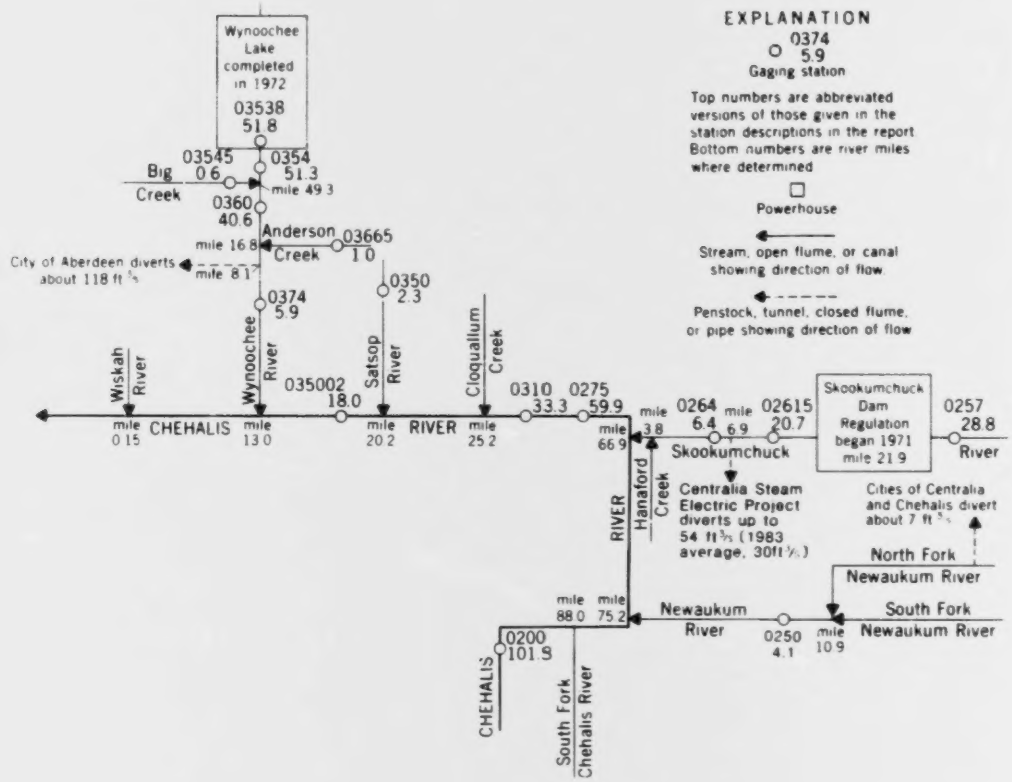

EXPLANATION
0374
5.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
Wynoochee Lake completed in 1972
03538
51.8
03545
0.6
Big Creek
0354
51.3
mile 49.3
0360
40.6
Anderson Creek
03665
1.0
mile 16.8
City of Aberdeen diverts about 118 ft³/s
mile 8.1
0350
2.3
0374
5.9
Wiskah River
Wynoochee River
Satsop River
Cloquallum Creek
035002
18.0
0310
33.3
0275
59.9
mile 0.15
CHEHALIS
mile 13.0
mile 20.2
RIVER
mile 25.2
mile 66.9
mile 3.8
0264
6.4
mile 6.9
02615
20.7
Skookumchuck Dam Regulation began 1971 mile 21.9
0257
28.8
Skookumchuck
River
Hanaford Creek
Centralia Steam Electric Project diverts up to 54 ft³/s (1983 average, 30ft³/s)
Cities of Centralia and Chehalis divert about 7 ft³/s
North Fork Newaukum River
South Fork Newaukum River
RIVER
mile 88.0
mile 75.2
Newaukum River
0250
4.1
mile 10.9
0200
101.8
CHEHALIS
South Fork Chehalis River

Figure 7.—Gaging stations in Chehalis River basin.

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE¼NW¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi south of Doty, 1.6 mi upstream from Elk Creek, 3.4 mi north of Pe Ell, and at mile 101.8.

DRAINAGE AREA.--113 mi^2.

PERIOD OF RECORD.--October 1939 to current year. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

REVISED RECORDS.--WSP 1316: 1943(M). WSP 1446: 1946(M). WDR-WA-72-1: 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 302.1 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 100 ft (30 m) downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--44 years, 578 ft^3/s, 69.46 in/yr, 418,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft^3/s Jan. 20, 1972, gage height, 18.36 ft, from rating curve extended above 7,400 ft^3/s on basis of slope-area measurement of peak flow; minimum, 18 ft^3/s Oct. 14, 1952, Aug. 25-28, 1958, Sept. 4, 5, 1972; minimum gage height, 0.69 ft Aug. 18, 19, 1977, Aug. 24-27, Sept. 3, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2100	*15,200	*15.06	Jan. 5	1300	7,330	10.15
Dec. 16	0900	7,900	10.62				

Minimum discharge, 34 ft^3/s Oct. 1, gage height, 0.77 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	500	2270	378	535	755	1520	170	100	158	81	68
2	35	387	1760	387	465	735	1470	167	100	311	83	83
3	39	324	6870	465	410	650	1300	164	96	311	78	80
4	38	364	5470	1330	369	580	1050	155	90	243	74	70
5	42	575	2270	5010	342	545	880	149	87	200	71	63
6	98	896	1490	3170	392	595	755	146	85	173	68	57
7	243	824	1060	3610	460	872	640	182	81	152	66	57
8	158	650	842	4030	500	1620	545	247	76	146	65	56
9	146	505	705	2610	890	3300	485	283	76	135	63	60
10	115	409	610	2340	1500	2480	460	271	179	120	62	81
11	90	346	530	1800	2250	1720	455	239	158	111	63	210
12	80	303	515	1280	2190	1320	432	214	122	122	65	125
13	71	271	490	968	2420	1210	396	194	102	360	60	96
14	65	239	998	765	1820	1300	364	182	94	465	57	85
15	60	221	2640	640	1530	1280	333	239	107	369	54	80
16	59	446	6230	555	1460	1040	307	203	98	295	53	74
17	102	2000	3620	490	2550	824	287	185	100	239	53	73
18	98	1440	3610	465	2410	680	267	176	239	203	52	85
19	83	1270	2980	418	1620	575	251	164	373	182	50	109
20	73	1150	2310	400	1490	500	232	149	275	170	49	85
21	83	902	1920	369	1350	441	217	140	210	152	49	74
22	640	700	2060	355	1690	396	214	132	176	130	47	71
23	510	570	1630	495	2130	450	243	125	167	120	47	66
24	279	475	1220	620	1640	400	299	117	164	111	50	62
25	203	405	974	670	1300	346	239	109	152	109	49	60
26	436	360	812	1210	1200	342	231	104	135	107	46	59
27	645	410	685	1600	1020	382	214	100	122	104	46	59
28	755	1030	595	1360	848	576	203	96	111	111	46	56
29	3050	1470	520	974	---	3420	197	92	111	96	78	53
30	1060	2110	460	760	---	3030	182	90	117	89	92	53
31	610	---	418	635	---	1980	---	104	---	83	73	---
TOTAL	10000	21552	58564	40159	36781	34344	14688	5088	4103	5677	1890	2310
MEAN	323	718	1889	1295	1314	1108	490	164	137	183	61.0	77.0
MAX	3050	2110	6870	5010	2550	3420	1520	283	373	465	92	210
MIN	34	221	418	355	342	342	182	90	76	83	46	53
CFSM	2.86	6.35	16.7	11.5	11.6	9.81	4.34	1.45	1.21	1.62	.54	.68
IN.	3.29	7.09	19.28	13.22	12.11	11.31	4.84	1.67	1.35	1.87	.62	.76
AC-FT	19830	42750	116200	79660	72960	68120	29130	10090	8140	11260	3750	4580

CAL YR 1982 TOTAL 251424 MEAN 689 MAX 6870 MIN 26 CFSM 6.10 IN. 82.77 AC-FT 498700
WTR YR 1983 TOTAL 235156 MEAN 644 MAX 6870 MIN 34 CFSM 5.70 IN. 77.41 AC-FT 466400

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW¼SW¼ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi southeast of Chehalis, and at mile 4.1.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--March 1929 to September 1931, July 1942 to September 1981, October 1982 to September 1983.

REVISED RECORDS.--WSP 1012: 1943. WSP 1316: 1929-30(M), 1960(M). WSP 1716: Drainage area. WSP 1932: 1931(M), 1945-49, 1954(M), 1956(P), 1958(M), 1959-60.

GAGE.--Water-stage recorder. Altitude of gage is 190 ft, from topographic map. Prior to Oct. 1, 1929, nonrecording gage at same site at datum 1.0 ft higher. Oct. 1, 1929, to July 5, 1962, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for period Oct. 1-28, which are poor. Cities of Chehalis and Centralia divert about 7 ft³/s from North Fork Newaukum River for municipal use. No regulation above station.

AVERAGE DISCHARGE.--42 years (water years, 1930-31, 1943-81, 1983), 502 ft³/s, 363,700 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Dec. 2, 1977, gage height, 12.49 ft; maximum gage height, 13.62 ft Dec. 9, 1953; minimum discharge, 12 ft³/s Sept. 13, 14, 1949, Aug. 29, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0300	*7,820	*10.68	Jan. 8	1200	4,400	7.73
Dec. 16	1200	4,030	7.39	Jan. 10	1500	4,190	7.54
Jan. 5	2000	5,770	8.97				

Minimum discharge, 29 ft³/s Oct. 6, gage height, 0.99 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	293	1150	353	451	685	1070	195	111	328	125	135
2	32	242	1060	353	407	822	1390	190	113	497	123	177
3	38	197	3740	439	370	715	1220	192	117	515	117	165
4	36	263	5140	918	342	625	936	182	102	360	109	129
5	32	342	1770	3770	318	583	765	172	96	272	104	109
6	33	524	1280	3440	335	710	645	169	91	227	97	96
7	50	565	906	3550	443	912	565	212	84	203	93	90
8	60	423	725	3960	388	1350	497	304	79	184	91	86
9	64	318	620	2660	715	2280	467	374	76	197	90	119
10	54	257	529	3750	858	2180	479	325	102	167	84	119
11	46	212	459	2450	888	1460	443	269	167	149	91	245
12	42	184	451	1500	1020	1100	403	236	165	200	129	190
13	38	172	630	1090	1580	984	370	215	129	750	91	145
14	36	153	730	864	1390	1010	346	197	106	870	83	123
15	33	141	1150	730	984	834	325	254	160	665	78	108
16	33	184	3310	645	894	710	307	239	151	515	76	99
17	49	942	2500	578	1030	615	290	212	123	407	74	97
18	76	978	2500	529	1090	542	278	206	167	342	72	119
19	58	984	1960	556	834	484	260	192	328	287	69	224
20	49	834	1600	502	795	439	251	177	342	290	67	141
21	48	660	1500	455	745	411	254	165	257	281	67	117
22	115	497	1700	427	834	415	236	156	200	233	65	104
23	153	403	1300	459	1180	378	266	147	227	206	62	94
24	102	339	1000	493	1510	353	384	137	360	192	64	88
25	81	290	890	498	1280	475	300	129	287	182	64	86
26	135	263	770	655	1160	431	263	121	230	179	60	83
27	203	281	596	1090	930	451	242	115	192	169	60	87
28	209	529	511	1030	770	455	227	111	167	195	60	81
29	1370	810	455	755	---	1510	224	102	165	162	97	78
30	515	984	415	610	---	1870	212	97	221	145	212	75
31	314	---	381	515	---	1280	---	102	---	133	145	---
TOTAL	4136	13264	41728	39624	23541	27069	13915	5894	5115	9502	2819	3609
MEAN	133	442	1346	1278	841	873	464	190	171	307	90.9	120
MAX	1370	984	5140	3960	1580	2280	1390	374	360	870	212	245
MIN	32	141	381	353	318	353	212	97	76	133	60	75
CFSM	.86	2.85	8.68	8.25	5.43	5.63	2.99	1.23	1.10	1.98	.59	.77
IN.	.99	3.18	10.01	9.51	5.65	6.50	3.34	1.41	1.23	2.28	.68	.87
AC-FT	8200	26310	82770	78590	46690	53690	27600	11690	10150	18850	5590	7160

WTR YR 1983 TOTAL 190216 MEAN 521 MAX 5140 MIN 32 CFSM 3.36 IN. 45.65 AC-FT 377300

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW¼NW¼ sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft downstream from logging bridge, 0.4 mi downstream from Hospital Creek, 5.8 mi southeast of Vail, and at mile 28.8.

DRAINAGE AREA.--40.0 mi^2.

PERIOD OF RECORD.--October 1957 to current year.

REVISED RECORDS.--WDR WA-75-1: 1974.

GAGE.--Water-stage recorder. Altitude of gage is 710 ft, from topographic map.

REMARKS.--Records excellent except those above 1,000 ft^3/s, which are good.

AVERAGE DISCHARGE.--16 years, 205 ft^3/s, 69.60 in/yr, 148,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft^3/s Jan. 20, 1972, gage height, 10.93 ft; minimum, 18 ft^3/s part or all of each day Aug. 22-24, 26-31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2000	2,830	8.22	Jan. 8	0500	1,860	7.27
Dec. 16	1000	1,440	6.78	Jan. 10	0700	1,560	6.93
Jan. 5	1200	*2,900	*8.28				

Minimum discharge, 19 ft^3/s part or all of each day Oct. 1, 5, 6, gage height, 3.16 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	124	421	144	183	288	441	74	50	94	61	63
2	21	100	372	166	164	267	482	71	50	124	59	68
3	21	87	1520	213	149	240	413	69	48	113	56	56
4	20	173	1300	641	138	216	337	67	46	99	54	50
5	19	221	646	1980	128	213	285	65	45	89	51	46
6	42	314	453	1200	147	246	243	68	44	81	50	43
7	46	267	316	1370	164	307	211	99	42	75	48	42
8	37	195	279	1540	147	507	188	130	41	69	48	39
9	33	149	235	1070	258	788	176	134	41	67	46	42
10	29	120	203	1390	324	805	162	117	78	61	45	63
11	28	102	176	910	341	603	151	102	72	58	47	81
12	26	90	218	603	499	449	138	95	74	95	45	61
13	24	83	224	441	682	380	128	87	59	402	43	54
14	24	74	291	351	547	372	120	89	54	351	41	49
15	23	69	622	294	410	330	115	117	84	261	41	46
16	24	136	1240	255	387	288	109	99	65	208	39	44
17	43	552	959	224	561	249	104	92	67	171	38	42
18	36	433	822	205	579	216	100	89	107	144	38	75
19	30	441	728	205	413	193	97	81	171	130	37	63
20	28	372	676	183	469	173	94	77	149	138	36	53
21	33	282	666	166	433	160	90	72	118	120	36	48
22	100	216	661	164	394	153	87	68	102	107	35	45
23	72	176	503	203	547	140	90	64	107	99	35	43
24	53	149	376	229	632	132	126	61	107	92	35	41
25	50	132	314	224	516	138	99	59	94	90	34	39
26	144	120	273	258	445	130	94	56	86	87	33	38
27	126	128	229	421	380	138	87	54	78	83	33	38
28	205	279	203	383	324	147	83	53	72	81	36	36
29	465	344	183	301	---	598	80	50	71	72	44	36
30	200	425	166	249	---	661	77	49	74	68	89	35
31	132	---	160	208	---	503	---	51	---	64	48	---
TOTAL	2153	6353	15435	16191	10361	10030	5007	2459	2296	3793	1381	1479
MEAN	69.5	212	498	522	370	324	167	79.3	76.5	122	44.5	49.3
MAX	465	552	1520	1980	682	805	482	134	171	402	89	81
MIN	19	69	160	144	128	130	77	49	41	58	33	35
CFSM	1.74	5.30	12.4	13.0	9.25	8.10	4.17	1.98	1.91	3.05	1.11	1.23
IN.	2.00	5.91	14.35	15.06	9.64	9.33	4.66	2.29	2.14	3.53	1.28	1.38
AC-FT	4270	12600	30620	32110	20550	19890	9930	4880	4550	7520	2740	2930

CAL YR 1982 TOTAL 83773 MEAN 230 MAX 2080 MIN 19 CFSM 5.75 IN. 77.91 AC-FT 166200
WTR YR 1983 TOTAL 76938 MEAN 211 MAX 1980 MIN 19 CFSM 5.27 IN. 71.55 AC-FT 152600

12026150 SKOOKUMCHUCK RIVER BELOW BLOODY RUN CREEK, NEAR CENTRALIA, WA

LOCATION.--Lat 46°47'25", long 122°44'03", in NW¼NW¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank 0.7 mi downstream from Bloody Run Creek, 1.2 mi downstream from Skookumchuck Dam, 12 mi northeast of Centralia, and at mile 20.7.

DRAINAGE AREA.--65.9 mi². Prior to August 1969, 61.7 mi².

PERIOD OF RECORD.--April 1929 to November 1933, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316 and 1736. Published as "near Centralia" (12026000) prior to August 1969.

GAGE.--Water-stage recorder. Datum of gage is 317.34 ft National Geodetic Vertical Datum of 1929. Apr. 1, 1929, to Sept. 30, 1931, and Feb. 1, 1932, to Dec. 6, 1933, nonrecording gage at site 1.1 mi upstream at different datum. Oct. 9, 1939, to July 31, 1969 at site 1.3 mi upstream at datum 301.04 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Skookumchuck Dam since January 1971. No diversions above station.

AVERAGE DISCHARGE.--48 years (water years 1930-33, 1940-83), 253 ft³/s, 52.14 in/yr, 183,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft³/s Dec. 9, 1953, gage height, 48.59 ft, site and datum in use; minimum, 12 ft³/s May 28, 1970, caused by pumping during dam construction.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 5	1800	*2,870	*10.47	Jan. 8	1100	2,230	9.90

Minimum discharge, 85 ft³/s May 4, 5, gage height, 5.05 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	108	173	290	370	401	564	93	95	105	103	158
2	142	106	166	288	426	394	642	91	95	110	103	173
3	138	105	296	288	401	367	586	93	95	108	103	171
4	140	110	364	310	382	338	471	88	93	103	103	173
5	144	113	344	1710	353	315	379	91	93	99	103	175
6	144	117	338	1820	329	324	321	90	93	99	103	173
7	144	117	332	1700	321	353	272	142	93	98	103	168
8	144	112	327	2040	310	515	233	207	93	98	103	168
9	144	108	324	1500	304	869	209	191	95	98	103	168
10	142	108	315	1710	307	1130	197	188	98	98	103	171
11	130	106	310	1330	313	968	182	166	98	98	103	175
12	113	106	313	909	321	676	166	136	98	101	103	173
13	105	105	321	642	350	539	154	101	96	117	103	162
14	101	105	324	508	388	505	144	99	96	112	105	162
15	101	122	341	432	471	448	138	99	96	108	103	164
16	101	138	1190	382	474	350	130	99	96	122	103	164
17	103	158	1510	341	525	318	126	99	96	158	103	166
18	103	160	1340	329	700	293	121	98	98	162	105	171
19	101	162	1110	326	568	264	117	98	98	202	105	164
20	101	164	1000	324	512	251	115	98	98	231	106	164
21	101	158	931	318	484	200	115	98	96	216	106	164
22	105	152	963	315	465	142	105	98	96	251	106	164
23	103	148	814	312	586	140	112	99	96	200	108	164
24	101	146	568	312	856	146	138	99	98	105	115	164
25	101	144	442	310	760	158	128	96	98	105	122	166
26	108	144	379	318	642	160	119	96	96	105	121	168
27	106	146	329	318	536	171	112	96	96	105	121	168
28	121	164	307	344	452	173	103	93	95	105	121	166
29	130	177	304	401	---	416	101	91	96	103	121	168
30	110	171	302	361	---	918	95	90	99	103	124	168
31	106	---	296	318	---	743	---	93	---	103	134	---
TOTAL	3675	3980	16373	20806	12906	12985	6395	3436	2879	3928	3368	5023
MEAN	119	133	528	671	461	419	213	111	96.0	127	109	167
MAX	144	177	1510	2040	856	1130	642	207	99	251	134	175
MIN	101	105	166	288	304	140	95	88	93	98	103	158
AC-FT	7290	7890	32480	41270	25600	25760	12680	6820	5710	7790	6680	9960

CAL YR 1982 TOTAL 109333 MEAN 300 MAX 3060 MIN 90 AC-FT 216900
WTR YR 1983 TOTAL 95754 MEAN 262 MAX 2040 MIN 88 AC-FT 189900

12026400 SKOOKUMCHUCK RIVER NEAR BUCODA, WA

LOCATION.--Lat 46°46'20", long 122°55'23", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, on left bank 100 ft downstream from bridge on State Highway 507, 3.3 mi southwest of Bucoda, and at mile 6.4.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--December 1967 to current year. Water temperatures October 1968 to September 1971; sediment records July 1968 to September 1971.

GAGE.--Water-stage recorder. Datum of gage is 194.60 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent except those above 2,000 ft³/s, which are fair. Flow regulated by Skookumchuck Dam since January 1971. An average of 30 ft³/s is diverted at point 0.5 mi upstream for consumptive use at Centralia Steam Electric Project. During peak demand months up to 54 ft³/s may be diverted for periods of one day or less. Other minor diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--12 years (water years 1972-83), 366 ft³/s, 265,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,190 ft³/s Jan. 21, 1972, gage height, 16.82 ft; minimum, 21 ft³/s Aug. 15, 16, 18, 19, 20, 1970, gage height, 3.85 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,750 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 5	1800	*4,570	*13.79	Jan. 8	0700	3,490	12.37

Minimum discharge, 82 ft³/s Aug. 22-24, minimum gage height, 4.56 ft Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	141	400	378	429	589	846	118	112	145	97	150
2	131	131	350	375	524	621	960	114	112	190	95	192
3	133	120	900	422	482	589	916	116	112	179	94	167
4	133	131	1600	757	459	539	729	112	112	150	94	158
5	139	158	777	3500	429	470	573	110	110	137	94	160
6	141	210	609	2670	403	470	474	110	110	126	97	162
7	139	233	546	2740	403	505	407	128	108	106	100	158
8	141	179	494	3120	382	745	357	288	102	118	103	158
9	139	145	440	2200	433	1200	323	257	102	120	97	158
10	139	128	414	2520	493	1670	313	248	112	110	92	158
11	135	116	400	1740	520	1410	285	233	120	100	89	158
12	110	116	440	1140	554	1050	257	190	128	110	90	160
13	99	114	455	846	657	834	239	128	114	169	100	158
14	89	110	512	689	677	809	215	122	103	184	95	156
15	89	114	781	554	701	725	187	131	102	158	89	152
16	89	145	2170	478	697	585	176	128	110	150	89	154
17	92	319	2290	448	709	497	176	124	114	190	87	154
18	92	350	1990	433	936	451	169	124	122	198	87	162
19	92	375	1570	400	814	392	162	122	135	212	94	171
20	99	371	1580	385	701	368	156	120	135	288	106	160
21	102	326	1370	385	677	329	156	118	122	285	90	162
22	102	263	1480	389	633	254	143	116	116	263	85	171
23	105	221	1100	415	830	233	150	114	128	294	82	158
24	95	192	789	422	1320	239	210	118	135	114	87	158
25	94	179	637	407	1190	266	198	112	128	120	102	154
26	114	173	539	494	1000	266	169	110	103	112	102	147
27	139	187	474	601	838	278	158	110	120	103	99	147
28	139	291	460	585	689	294	152	106	120	100	103	150
29	400	425	430	589	---	505	143	105	124	102	108	150
30	207	389	385	508	---	1320	124	105	133	105	118	154
31	152	---	385	425	---	1150	---	106	---	97	112	---
TOTAL	3998	6352	26767	31015	18580	19653	9523	4243	3504	4835	2977	4757
MEAN	129	212	863	1000	664	634	317	137	117	156	96.0	159
MAX	400	425	2290	3500	1320	1670	960	288	135	294	118	192
MIN	89	110	350	375	382	233	124	105	102	97	82	147
AC-FT	7930	12600	53090	61520	36850	38980	18890	8420	6950	9590	5900	9440

CAL YR 1982 TOTAL 155050 MEAN 425 MAX 4300 MIN 75 AC-FT 307500
WTR YR 1983 TOTAL 136204 MEAN 373 MAX 3500 MIN 82 AC-FT 270200

12027500 CHEHALIS RIVER NEAR GRAND MOUND, WA

LOCATION.--Lat 46°46'34", long 123°02'04", in NE¼NE¼ sec.22, T.15 N., R.3 W., Thurston County, Hydrologic Unit 17100103, on left bank at downstream side of highway bridge at Meadows, 1.5 mi southwest of Grand Mound, 7.0 mi downstream from Skookumchuck River, and at mile 59.9.

DRAINAGE AREA.--895 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Water temperatures March 1952 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1932-34(M).

GAGE.--Water-stage recorder. Datum of gage is 123.65 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 3, 1934, nonrecording gage at present site at datum 3.0 ft higher.

REMARKS.--Records good. Minor effect from regulation on Skockumchuck River by Skookumchuck Dam since January 1971. Up to 54 ft^3/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft^3/s for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--55 years, 2,833 ft^3/s, 42.99 in/yr, 2,053,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft^3/s Jan. 21, 1972, gage height, 18.21 ft; minimum, 32 ft^3/s Aug. 30, 1967; minimum gage height, 0.83 ft Aug. 27, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 5	0400	*25,600	*15.19	Dec. 18	1500	21,400	14.25
Jan. 8	2200	20,800	14.10				

Minimum discharge, 256 ft^3/s Oct. 1-3, minimum gage height, 2.22 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	259	2180	9240	2560	3580	4790	9140	984	583	801	463	507
2	256	1740	8600	2430	3200	4950	8760	944	583	1220	447	595
3	257	1370	10700	2640	2900	4570	8800	931	583	1510	436	631
4	264	1210	20300	3640	2650	4190	7350	918	559	1220	420	565
5	264	1600	23100	10700	2450	3720	5640	879	529	977	400	502
6	272	2930	16100	18800	2380	3770	4440	859	513	833	390	469
7	312	3620	9860	18800	2840	4180	3670	905	491	733	380	436
8	518	3050	6490	19500	2750	6170	3190	1260	463	691	380	420
9	508	2280	4890	19800	3700	10200	2830	1550	441	691	365	425
10	480	1760	3910	17800	7530	14100	2760	1540	485	649	350	469
11	425	1440	3260	16200	8540	12600	2610	1350	715	595	335	607
12	365	1220	3050	11800	8940	9340	2440	1180	697	577	365	781
13	316	1100	3300	8340	11200	7550	2240	1030	631	963	370	631
14	286	989	3490	6070	11600	7380	2040	938	553	2290	350	541
15	270	898	7870	4740	9080	7240	1850	977	547	1950	325	491
16	261	931	14500	4010	7780	6140	1700	1080	619	1520	272	469
17	272	3940	20100	3500	8070	4950	1590	963	583	1250	302	447
18	350	7370	20900	3250	11400	4070	1510	911	619	1080	298	474
19	375	6480	19700	3140	9180	3460	1410	872	1010	950	289	661
20	340	6190	18200	2960	7240	3050	1330	820	1240	984	302	661
21	330	5350	16200	2720	6590	2760	1280	781	1120	991	293	547
22	496	4080	14200	2570	6560	2530	1220	751	793	911	280	507
23	1540	3190	13500	2710	8480	2380	1240	715	775	892	276	470
24	1060	2530	10000	3050	10400	2370	1740	679	892	673	284	443
25	739	2100	7220	3440	9210	2250	1710	643	879	619	289	425
26	697	1830	5700	4510	8070	2150	1400	619	775	607	293	410
27	1470	1750	4510	7360	6920	2180	1270	595	697	583	284	400
28	1540	2880	3720	8970	5720	2370	1170	583	643	589	289	400
29	7490	6030	3340	6920	---	5220	1120	559	607	589	320	390
30	6780	7870	3010	5240	---	13400	1050	535	673	535	491	380
31	3240	---	2760	4120	---	12700	---	535	---	491	583	---
TOTAL	32032	89908	311720	232290	188960	176730	88500	27886	20298	28964	10921	15154
MEAN	1033	2997	10060	7493	6749	5701	2950	900	677	934	352	505
MAX	7490	7870	23100	19800	11600	14100	9140	1550	1240	2290	583	781
MIN	256	898	2760	2430	2380	2150	1050	535	441	491	272	380
CFSM	1.15	3.35	11.2	8.37	7.54	6.37	3.30	1.01	.76	1.04	.39	.56
IN.	1.33	3.74	12.96	9.65	7.85	7.35	3.68	1.16	.84	1.20	.45	.63
AC-FT	63540	178300	618300	460700	374800	350500	175500	55310	40260	57450	21660	30060

CAL YR 1982 TOTAL 1300854 MEAN 3564 MAX 25700 MIN 157 CFSM 3.98 IN. 54.07 AC-FT 2580000
WTR YR 1983 TOTAL 1223363 MEAN 3352 MAX 23100 MIN 256 CFSM 3.75 IN. 50.85 AC-FT 2427000

12031000 CHEHALIS RIVER AT PORTER, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, at downstream end of left bank bridge pier, 30 ft downstream from Porter Creek, 0.1 mi west of Porter, and at mile 33.3.

DRAINAGE AREA.--1,294 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1952 to September 1972, water years 1973-75 (annual maximum), May 1975 to current year.

REVISED RECORDS.--WSP 1716: Drainage area. WSP 1932: 1954, 1956, 1960 (M).

GAGE.--Water-stage recorder. Datum of gage is 23.64 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those below 400 ft³/s, which are fair. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft³/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft³/s for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--28 years (water years 1935-72, 1976-83), 4,195 ft³/s, 44.02 in/yr, 3,039,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,600 ft³/s Jan. 22, 1972, gage height, 23.88 ft; minimum, 164 ft³/s Oct. 17, 1952, gage height, 2.25 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 28, 1937, reached a stage of 24.7 ft, from levels by Grays Harbor County. Flood of December 1933 reached a stage of 23.13 ft, from river profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 6	1300	23,900	20.60	Jan. 8	1700	*24,800	*20.83
Dec. 19	0400	24,100	20.65				

Minimum discharge, 382 ft³/s Oct. 5, 6, gage height, 3.25 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	397	3070	9940	3870	5700	7610	13700	1570	880	1100	740	812
2	398	2440	10700	3650	5040	7210	11600	1600	905	1390	707	870
3	398	2040	12900	3910	4560	6980	11700	1560	895	1750	698	880
4	398	1800	21000	5290	4130	6460	10700	1540	890	1730	675	851
5	396	2040	23400	12400	3770	5880	8780	1480	851	1430	651	759
6	407	2850	23600	18900	3580	5660	7080	1440	826	1230	636	707
7	501	3980	18300	23300	3890	6060	5910	1480	802	1100	621	670
8	536	3860	11600	24900	4070	7770	5070	1710	773	1010	613	647
9	665	3110	8130	24800	5270	11200	4450	2080	740	963	606	643
10	641	2480	6390	24400	9370	15100	4170	2150	783	947	591	754
11	598	2100	5260	22700	11400	16500	4000	2010	875	890	579	841
12	540	1830	4550	19800	12300	14400	3700	1820	1030	885	576	990
13	483	1620	4500	15200	14200	11700	3420	1640	958	1310	594	952
14	446	1490	4670	11300	15300	10700	3130	1500	875	2260	579	821
15	425	1360	7450	8690	13900	10600	2890	1500	860	2580	565	749
16	419	1520	13600	7150	11700	9730	2680	1590	875	2180	546	702
17	433	3610	18600	6200	11200	8200	2520	1510	920	1840	539	666
18	444	7990	22600	5620	13200	6860	2410	1430	1070	1610	531	749
19	495	8000	24200	5230	13600	5840	2280	1360	1180	1420	524	831
20	488	7690	23500	4900	11200	5070	2180	1300	1540	1330	520	931
21	479	7040	21900	4480	9800	4530	2080	1240	1460	1370	527	826
22	724	5740	19300	4170	9390	4130	2020	1180	1230	1320	520	740
23	1200	4560	17800	4200	10600	3830	2000	1130	1100	1200	509	698
24	1470	3730	15500	4610	12900	3680	2470	1080	1130	1130	509	659
25	1030	3130	11800	5280	13200	3420	2690	1040	1250	942	509	636
26	940	2720	9180	6100	11800	3340	2320	990	1150	905	520	621
27	1230	2600	7430	9250	10400	3200	2100	958	1030	910	516	609
28	1990	3160	6130	11700	8860	3410	1960	926	968	910	516	594
29	4660	5700	5300	10800	---	5200	1840	895	915	890	583	583
30	8500	8370	4690	8540	---	11700	1760	865	931	836	666	572
31	4720	---	4230	6850	---	15000	---	860	---	783	792	---
TOTAL	36451	111630	398150	328190	264330	240970	133610	43534	29692	40151	18258	22363
MEAN	1176	3721	12840	10590	9440	7773	4454	1404	990	1295	589	745
MAX	8500	8370	24200	24900	15300	16500	13700	2150	1540	2580	792	990
MIN	396	1360	4230	3650	3580	3200	1760	860	740	783	509	572
CFSM	.91	2.88	9.92	8.18	7.30	6.01	3.44	1.09	.77	1.00	.46	.58
IN.	1.05	3.21	11.45	9.43	7.60	6.93	3.84	1.25	.85	1.15	.52	.64
AC-FT	72300	221400	789700	651000	524300	478000	265000	86350	58890	79640	36210	44360

CAL YR 1982 TOTAL 1851389 MEAN 5072 MAX 32800 MIN 290 CFSM 3.92 IN. 53.22 AC-FT 3672000
WTR YR 1983 TOTAL 1667329 MEAN 4568 MAX 24900 MIN 396 CFSM 3.53 IN. 47.93 AC-FT 3307000

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: JULY 1959 to September 1960.
pH: July 1959 to September 1960.
WATER TEMPERATURES: July 1959 to September 1960, October 1961 to July 1972.
SUSPENDED SEDIMENT: October 1961 to September 1971.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)
NOV , 1982												
15...	1200	1360	94	6.8	4.0	2.3	11.8	--	24	400	28	0
JAN , 1983												
10...	1300	24100	54	7.2	9.0	18	10.7	91	110	K1700	16	0
MAR												
15...	1245	10600	60	6.5	10.0	10	10.8	95	330	610	19	12
MAY												
24...	1430	1070	84	7.6	19.0	1.6	9.9	107	K10	K16	29	0
JUL												
22...	1300	1320	80	7.7	19.0	2.9	8.9	96	K15	300	26	0
SEP												
22...	1145	720	95	7.8	14.5	1.8	9.4	92	K5	--	30	0

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
NOV , 1982												
15...	7.3	2.4	5.8	30	.5	.70	30	10	5.8	<.10	16	68
JAN , 1983												
10...	4.2	1.3	3.7	33	.4	.60	16	8.0	3.4	<.10	13	46
MAR												
15...	4.8	1.6	4.1	32	.4	.60	7.0	6.3	13	<.10	14	46
MAY												
24...	7.5	2.6	5.4	28	.4	.80	33	5.0	5.0	<.10	16	62
JUL												
22...	6.8	2.2	5.3	30	.5	.60	30	5.3	4.4	<.10	15	49
SEP												
22...	7.8	2.5	5.8	29	.5	.90	34	5.8	5.7	<.10	16	67

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	ALUMINUM, DISSOLVED (UG/L AS AL)
NOV , 1982											
15...	67	.09	250	12	.67	.100	.70	.040	.030	.020	30
JAN , 1983											
10...	44	.06	2990	22	.77	<.060	.50	.070	.020	<.010	--
MAR											
15...	49	.06	1320	<1	.65	.070	.50	.060	.020	.020	50
MAY											
24...	62	.08	179	23	.28	<.060	.70	.020	.010	.010	10
JUL											
22...	58	.07	175	6	.30	.080	.50	.050	.040	.040	20
SEP											
22...	65	.09	130	6	.32	.030	.60	.040	.020	.020	--

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

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12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
NOV , 1982											
15...	1	9	.8	<1	<1	<3	11	190	6	6	22
JAN , 1983											
10...	--	--	--	--	--	--	--	--	--	--	--
MAR											
15...	<1	8	<.5	<1	<1	<3	3	100	<1	6	12
MAY											
24...	<1	8	<.5	<1	<1	<3	2	140	1	<4	12
JUL											
22...	<1	7	<.5	<1	<1	<3	2	150	<1	19	11
SEP											
22...	--	--	--	--	--	--	--	--	--	--	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982											
15...	.4	<10	1	<1	<.	44	<6	20	5	18	--
JAN , 1983											
10...	--	--	--	--	--	--	--	--	39	2540	77
MAR											
15...	.1	<10	3	<1	<1	30	<6	4	31	887	70
MAY											
24...	<.1	<10	2	<1	<1	42	<6	4	3	8.7	--
JUL											
22...	<.1	<10	<1	1	<1	35	<6	11	8	29	--
SEP											
22...	--	--	--	--	--	--	--	--	7	14	--

12035000 SATSOP RIVER NEAR SATSOP, WA

LOCATION.--Lat 47°00'03", long 123°29'37", in NE¼SE¼ sec.36, T.18 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, in west pier of bridge on old U.S. Highway 410, 0.6 mi west of Satsop, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--299 mi².

PERIOD OF RECORD.--March 1929 to current year. Chemical analyses July 1960 to September 1971, October 1974 to September 1975, October 1976 to June 1980; sediment records November 1961 to June 1965 (partial-record station).

REVISED RECORDS.--WSP 1286: 1930-35(M), 1937(M). WSP 1716: Drainage area. WSP 1932: 1945, 1949(M), 1951(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1938, nonrecording gage at site 50 ft upstream at datum 20.9 ft higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years, 2,035 ft³/s, 92.43 in/yr, 1,474,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,600 ft³/s Jan. 22, 1935, elevation, 38.9 ft, from floodmarks, present datum; minimum, 166 ft³/s Sept. 21, 1938; minimum elevation, 21.66 ft, present datum, Sept. 3-6, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of 37.1 ft, from high-water mark, at railroad bridge 300 ft downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Elevation (ft)	Date	Time	Discharge (ft³/s)	Elevation (ft)
Dec. 4	0100	*32,800	*34.66	Jan. 8	0800	18,100	31.31
Dec. 16	0800	14,700	30.30	Mar. 9	1300	16,800	30.95
Jan. 5	1600	25,400	33.11				

Minimum discharge, 212 ft³/s Oct. 1, elevation, 22.03 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	213	1610	5050	1700	2320	2980	4390	819	440	694	558	468
2	218	1350	3820	1830	2110	2890	4860	798	428	1320	532	1040
3	231	1180	14700	2720	1930	2550	4400	779	413	1040	524	900
4	226	1610	17200	4660	1780	2320	3600	743	398	863	492	666
5	219	2880	6660	17300	1650	2160	3010	714	385	744	468	540
6	248	3900	4710	10100	1650	2260	2600	695	375	664	452	476
7	509	3050	3560	9940	1820	3030	2300	795	364	630	436	436
8	560	2550	3030	15800	1680	5450	2050	1230	354	628	420	405
9	511	2000	2640	9960	2690	13800	1890	1100	351	556	404	450
10	426	1640	2340	11700	3910	8740	1830	969	557	512	388	570
11	369	1390	2090	8870	8090	6240	1710	902	601	509	380	1200
12	332	1220	2230	6060	9060	4810	1580	848	514	1320	380	730
13	306	1100	2260	4620	8940	4540	1460	785	440	4040	366	640
14	291	995	2520	3750	6440	5730	1370	777	403	3830	352	580
15	277	925	6260	3180	5810	5230	1290	962	436	2360	345	540
16	278	1790	12800	2780	5400	4220	1220	848	443	1760	331	500
17	366	3670	8800	2580	11000	3460	1160	778	465	1490	324	460
18	368	3200	9350	2830	9580	2930	1110	747	770	1440	324	549
19	332	2770	7890	2950	6140	2560	1060	710	1090	1210	317	567
20	310	2580	5940	2760	6290	2300	1010	678	878	1090	310	468
21	342	2250	4990	2480	5200	2100	965	648	712	1000	304	428
22	3040	1930	5420	2290	6100	2000	934	620	617	900	298	404
23	2540	1680	4670	2650	8220	1920	959	589	573	810	292	380
24	1420	1490	3760	3300	7180	1890	1160	556	595	765	292	366
25	1260	1340	3240	4130	5320	1710	1130	527	656	720	292	359
26	1490	1270	2960	5130	4560	1640	1030	508	577	684	280	352
27	2060	1630	2600	5270	3910	1750	1030	496	520	747	274	352
28	1800	4320	2350	4250	3350	2060	952	476	486	860	292	331
29	4370	4880	2140	3430	---	6530	891	456	477	702	612	324
30	2500	5690	1960	2930	---	7630	841	443	471	639	594	310
31	1780	---	1820	2590	---	5620	---	454	---	594	476	---
TOTAL	29192	67890	159760	164540	142130	123050	53792	22450	15789	35121	12109	15791
MEAN	942	2263	5154	5308	5076	3969	1793	724	526	1133	391	526
MAX	4370	5590	17200	17300	11000	13800	4860	1230	1090	4040	612	1200
MIN	213	925	1820	1700	1650	1640	841	443	351	509	274	310
CFSM	3.15	7.57	17.2	17.8	17.0	13.3	6.00	2.42	1.76	3.79	1.31	1.76
IN.	3.63	8.45	19.88	20.47	17.68	15.31	6.69	2.79	1.96	4.37	1.51	1.96
AC-FT	57900	134700	316900	326400	281900	244100	106700	44530	31320	69660	24020	31320

CAL YR 1982 TOTAL 863987 MEAN 2367 MAX 26100 MIN 213 CFSM 7.92 IN. 107.49 AC-FT 1714000
WTR YR 1983 TOTAL 841614 MEAN 2306 MAX 17300 MIN 213 CFSM 7.71 IN. 104.71 AC-FT 1669000

12035002 CHEHALIS RIVER NEAR SATSOP, WA

LOCATION.--Lat 46°57'53", long 123°31'15", in NW¼NE¼ sec.11, T.17 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, 2.2 mi downstream from Satsop River, 3.2 mi southwest of Satsop, and at mile 18.0.

DRAINAGE AREA.--1,761 mi^2.

PERIOD OF RECORD.--June 1977 to September 1979 (gage heights and discharge record less than 2,000 ft^3/s, unpublished, available in files of the Washington office), October 1979 to September 1980 (gage heights and discharge record less than 5,000 ft^3/s), October 1980 to September 1981 (gage heights and discharge record less than 10,000 ft^3/s), October 1981 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 2.66 ft National Geodetic Vertical Datum of 1929 (Washington Public Power Supply System bench mark).

REMARKS.--Records good. Flow affected by minor regulation at Skookumchuck Dam on Skookumchuck River. Up to 30 ft^3/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft^3/s for municipal water supply for Centralia and Chehalis. River stages are affected daily by backwater from high tides.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,500 ft^3/s Dec. 18, 1979, gage height, 17.93 ft; minimum, 626 ft^3/s Aug. 26, 27, 1982, gage height, 0.57 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 45,300 ft^3/s Jan. 8, gage height, 16.12 ft; minimum observed, 690 ft^3/s Oct. 1, gage height, 0.63 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	714	5360	15200	6230	9000	11700	19200	2800	1450	1720	1310	1250
2	714	4340	14500	5990	7950	11000	17800	2660	1490	2760	1260	1580
3	730	3670	26600	7330	7310	10400	17000	2600	1450	2800	1250	1740
4	730	3910	37000	10700	6670	9620	15400	2530	1450	2670	1190	1490
5	722	5380	30000	36200	6160	8850	12800	2460	1410	2280	1140	1300
6	766	7550	29600	27900	5920	8780	10800	2390	1370	1950	1100	1180
7	1150	7700	25400	33800	6360	9920	9200	2490	1360	1820	1060	1110
8	1270	7150	17100	43500	6470	13700	7970	3070	1350	1740	1030	1050
9	1420	5760	12100	42000	8720	24600	7180	3420	1350	1610	1000	1030
10	1270	4760	9820	41600	13500	25000	6800	3390	1450	1540	982	1220
11	1150	4000	8280	38700	19500	23600	6520	3200	1580	1500	955	2050
12	1050	3490	7590	32200	22500	20800	5970	2900	1650	2040	937	1780
13	955	3140	7370	24000	24600	17800	5560	2650	1540	4400	937	1630
14	892	2850	7750	17300	23100	17400	5140	2480	1440	6630	910	1430
15	856	2630	13500	13300	21300	16700	4800	2690	1430	5420	901	1300
16	838	3670	31800	11300	18700	14900	4480	2600	1430	4270	880	1200
17	937	8280	28300	10000	21300	12600	4250	2530	1500	3520	860	1150
18	964	11500	32600	9580	23900	10800	4010	2370	1910	3250	850	1280
19	964	11400	34900	9250	21200	9280	3800	2250	2370	2790	840	1460
20	955	10900	33500	8650	19200	8180	3640	2160	2440	2510	830	1410
21	964	10000	31000	7840	16400	7310	3460	2050	2270	2420	820	1300
22	4060	8480	27000	7310	16500	6910	3340	1970	1970	2240	800	1190
23	190	7070	25100	7700	19500	6600	3360	1900	1800	2050	800	1120
24	3300	6010	21300	6410	21200	6320	4160	1820	1800	1930	800	1090
25	2650	5220	17200	10400	19600	5840	4300	1720	1940	1710	820	1060
26	2630	4700	13300	11900	17700	5620	50	1660	1850	1600	840	1010
27	3600	5000	11100	14900	15300	5600	3550	1600	1660	1660	840	1000
28	3960	7990	9400	16500	13200	6140	3310	1540	1540	1820	850	973
29	9180	10900	8220	15200	---	12400	3090	1500	1500	1590	1030	946
30	10900	14200	7400	12400	---	19100	2940	1490	1490	1500	1200	928
31	7370	---	6710	10500	---	20700	---	1470	---	1400	1190	---
TOTAL	71851	197010	600640	540590	432760	388170	207680	72380	49240	77150	30212	38257
MEAN	2318	6567	19380	17440	15460	12520	6923	2335	1641	2489	975	1275
MAX	10900	14200	37000	43500	24600	25000	19200	3420	2440	6630	1310	2050
MIN	714	2630	6710	5990	5920	5600	2940	1470	1350	1400	800	928
CFSM	1.32	3.73	11.0	9.90	8.78	7.11	3.93	1.33	.93	1.41	.55	.72
IN.	1.52	4.16	12.69	11.42	9.14	8.20	4.39	1.53	1.04	1.63	.64	.81
AC-FT	142500	390800	1191000	1072000	858400	769900	411900	143600	97670	153000	59930	75850

CAL YR 1982 TOTAL 2941582 MEAN 8059 MAX 47000 MIN 626 CFSM 4.58 IN. 62.14 AC-FT 5835000
WTR YR 1983 TOTAL 2705940 MEAN 7414 MAX 43500 MIN 714 CFSM 4.21 IN. 57.16 AC-FT 5367000

12035380 WYNOOCHEE LAKE NEAR GRISDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE¼NW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi north of Grisdale, at river mile 51.8.

DRAINAGE AREA.--41.0 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 22, 1973, staff gage on upstream face of dam.

REMARKS.--Reservoir is formed by concrete gravity-type dam with gate-type spillway; construction began in 1969; completed in 1972. Usable capacity, 67,288 acre-ft below elevation 690 ft, sluice invert level, and 800 ft, full pool elevation. Dead storage, 2,117 acre-ft below elevation 690 ft. Figures given herein represent total contents. Water is used for flood control, water supply, and recreation.

COOPERATION.--Daily elevations at 0800 hours, monthend elevations at 2400 hours, and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 70,078 acre-ft July 13, 1983, elevation, 800.60 ft; minimum observed, 12,210 acre-ft Oct. 31, 1972, elevation, 725.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 70,078 acre-ft July 13, elevation, 800.60 ft; minimum observed, 33,496 acre-ft Jan. 2, elevation, 761.39 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	771.33	41,365	--
Oct. 31	763.87	35,389	-5,976
Nov. 30	767.32	38,097	+2,708
Dec. 31	761.48	33,564	-4,533
CAL YR 1982	--	--	-1,118
Jan. 31	761.98	33,943	+379
Feb. 28	764.35	35,761	+1,818
Mar. 31	785.16	53,835	+18,074
Apr. 30	791.50	60,209	+6,374
May 31	797.30	66,405	+6,196
June 30	798.94	68,219	+1,814
July 31	797.25	66,350	-1,869
Aug. 31	791.09	59,784	-6,566
Sept. 30	775.25	44,700	-15,084
WTR YR 1983	--	--	+3,335

12035400 WYNOOCHEE RIVER NEAR GRISDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in NW¼SW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi downstream from Wynoochee Dam, 1.7 mi north of Grisdale, 1.7 mi downstream from Scatter Creek, and at mile 51.3.

DRAINAGE AREA.--41.3 mi^2.

PERIOD OF RECORD.--October 1965 to current year. Sediment records February 1966 to May 1967.

GAGE.--Water-stage recorder. Altitude of gage is 630 ft, from topographic map. Prior to Nov. 3, 1967, at site 1,500 ft upstream at different datum.

REMARKS.--Records good. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--18 years, 543 ft^3/s, 178.55 in/yr, 393,400 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft^3/s Dec. 12, 1966, gage height, about 18.0 ft, from graph based on gage readings, site and datum then in use; minimum, 0.9 ft^3/s Sept. 10, 12, 1974, gage height, 0.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,640 ft^3/s Dec. 4, gage height 6.65 ft; minimum, 186 ft^3/s Mar. 18, gage height, 1.28 ft; minimum daily, 200 ft^3/s Mar. 22, Apr. 8-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212	649	1510	315	466	735	844	205	208	303	242	242
2	212	488	1810	315	369	663	844	205	208	420	242	374
3	212	488	924	360	299	564	844	205	208	420	242	450
4	212	540	5590	510	291	558	471	205	208	420	242	450
5	212	812	4190	1160	275	558	205	202	208	420	242	450
6	212	828	1530	2050	279	558	205	202	208	342	245	445
7	208	828	602	3340	283	1100	202	202	208	208	245	450
8	205	727	477	2540	256	2300	200	202	208	208	245	616
9	205	589	440	2930	596	3630	200	202	208	208	245	884
10	205	471	445	2660	916	2920	200	202	208	212	245	884
11	205	387	430	1900	1440	1810	202	202	208	212	245	876
12	202	387	435	1290	2240	1070	202	202	208	320	245	876
13	202	387	712	908	2480	828	202	202	208	1680	245	868
14	202	387	1030	691	2870	967	202	202	208	1670	245	868
15	202	450	2030	596	1970	583	202	202	208	850	245	735
16	202	705	2860	590	1540	391	202	202	208	616	245	522
17	202	596	2170	590	2190	299	202	202	208	616	245	369
18	202	488	1610	1080	2120	231	202	202	208	382	245	369
19	202	425	1600	1430	1490	225	205	202	208	202	245	324
20	235	425	1170	1000	1520	225	205	202	208	202	245	264
21	415	425	804	628	1520	215	205	202	245	212	245	264
22	1500	364	772	546	1880	200	205	202	279	228	245	264
23	2270	275	684	546	3070	202	205	202	287	235	245	264
24	2230	218	635	1020	2560	202	205	205	299	235	245	264
25	1200	218	628	1480	1210	202	205	205	319	249	245	264
26	1120	218	528	1490	812	205	205	205	319	264	245	264
27	1860	221	400	1500	788	205	205	205	319	242	245	228
28	1710	656	369	958	765	208	205	205	291	242	245	205
29	1190	1310	364	728	---	212	205	208	242	242	245	205
30	924	1530	342	728	---	268	205	208	215	242	342	205
31	924	---	319	590	---	534	---	208	---	242	303	---
TOTAL	19494	16492	37410	36469	36495	22868	8291	6307	6975	12544	7735	13743
MEAN	629	550	1207	1176	1303	738	276	203	232	405	250	458
MAX	2270	1530	5590	3340	3070	3630	844	208	319	1680	342	884
MIN	202	218	319	315	256	200	200	202	208	202	242	205
AC-FT	38670	32710	74200	72340	72390	45360	16450	12510	13830	24880	15340	27260
MEAN†	532	595	1133	1182	1337	1031	384	304	263	374	143	205
CFSM†	12.9	14.4	27.4	28.6	32.4	25.0	9.3	7.4	6.4	9.1	3.5	5.0
IN.†	14.84	16.08	31.63	33.01	33.69	28.80	10.36	8.49	7.10	10.45	3.98	5.53
AC-FT†	32690	35420	69670	72720	74710	63430	22820	18710	15640	23010	8770	12180

CAL YR 1982 TOTAL 197080 MEAN 540 MAX 5590 MIN 196 AC-FT 390900 MEAN† 538 CFSM† 13.0 IN.† 176.97 AC-FT† 389800
WTR YR 1983 TOTAL 224823 MEAN 616 MAX 5590 MIN 200 AC-FT 445900 MEAN† 620 CFSM† 15.0 IN.† 203.94 AC-FT† 449200

† Adjusted for change in reservoir contents.

12035450 BIG CREEK NEAR GRISDALE, WA

LOCATION.--Lat 47°22'28", long 123°38'08", in SE¼SE¼ sec.24, T.22 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on left bank 280 ft upstream from road bridge, 1.5 mi northwest of Grisdale, and 0.6 mi upstream from mouth.

DRAINAGE AREA.--9.57 mi².

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft, from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--11 years, 119 ft³/s, 168.86 in/yr, 86,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s Dec. 26, 1975, gage height, 8.89 ft, from rating curve extended above 1,500 ft³/s; minimum, 9.4 ft³/s part or all of each day Aug. 25, 28, 29, 31, Sept. 1, 2, 3, 7, 8, 1982, gage height, 2.51 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1200	*2,480	*8.04	Jan. 8	0100	1,220	6.11
Dec. 15	2200	1,110	5.77	Jan. 10	0200	1,130	5.96
Jan. 5	0600	1,530	6.54	Mar. 9	unknown	1,410	6.44

Minimum discharge, 11.6 ft³/s Oct. 1, gage height, 2.54 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	135	328	86	96	115	223	34	18	124	31	94
2	15	106	279	113	86	100	246	32	17	119	31	140
3	14	98	1670	187	74	86	195	30	17	82	29	64
4	13	200	570	372	67	74	152	29	16	62	28	47
5	12	358	258	884	62	68	124	28	16	50	26	39
6	82	252	184	261	76	74	106	29	16	44	25	35
7	87	255	142	749	91	150	94	54	16	40	25	31
8	62	198	117	827	82	350	82	87	15	36	24	30
9	54	142	98	628	246	970	74	65	19	32	23	28
10	40	115	84	832	328	700	71	55	55	31	22	106
11	31	96	74	441	670	450	65	47	34	54	22	91
12	26	82	147	258	799	275	60	43	28	200	21	60
13	23	72	113	184	550	230	55	39	24	542	20	47
14	21	65	292	144	368	280	50	37	24	240	20	42
15	19	64	636	117	358	230	47	42	42	147	19	37
16	39	231	723	98	368	180	44	36	32	108	19	35
17	37	198	534	108	674	140	43	34	52	87	18	32
18	31	144	636	174	379	110	40	32	98	74	18	35
19	26	152	444	182	348	84	39	30	104	65	17	31
20	24	135	301	142	526	76	36	29	71	60	17	29
21	169	110	261	110	285	71	34	28	54	54	16	28
22	628	94	292	96	475	66	32	26	46	49	16	25
23	203	82	220	156	653	67	32	25	40	46	16	24
24	169	72	179	270	334	60	50	24	39	42	16	23
25	164	65	166	301	223	57	43	23	40	39	16	22
26	311	67	156	379	225	54	52	22	35	37	15	23
27	228	198	137	273	177	52	52	22	32	44	15	21
28	314	619	121	184	137	60	44	21	30	43	32	20
29	355	397	110	142	---	700	39	20	29	37	54	20
30	177	619	100	128	---	407	36	19	26	35	34	19
31	144	---	91	110	---	267	---	18	---	34	26	---
TOTAL	3530	5421	9463	8936	8757	6603	2260	1100	1087	2657	711	1278
MEAN	114	181	305	288	313	213	75.3	35.5	36.2	85.7	22.9	42.6
MAX	628	619	1670	884	799	970	246	94	104	542	54	140
MIN	12	64	74	86	62	52	32	18	15	31	15	19
CFSM	11.9	18.9	31.9	30.1	32.7	22.3	7.87	3.71	3.78	8.96	2.39	4.45
IN.	13.72	21.07	36.78	34.74	34.04	25.67	8.78	4.28	4.23	10.33	2.76	4.97
AC-FT	7000	10750	18770	17720	17370	13100	4480	2180	2160	5270	1410	2530

CAL YR 1982 TOTAL 48649 MEAN 133 MAX 1670 MIN 9.4 CFSM 13.9 IN. 189.11 AC-FT 96500
WTR YR 1983 TOTAL 51803 MEAN 142 MAX 1670 MIN 12 CFSM 14.8 IN. 201.37 AC-FT 102800

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE¼NE¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi upstream from Save Creek, 2.5 mi downstream from Oxbow Dam Site, 11.0 mi downstream from Wynoochee Dam, 23.5 mi northeast of city hall in Aberdeen, and at mile 40.6.

DRAINAGE AREA.--74.1 mi².

PERIOD OF RECORD.--May 1925 to current year. Published as "at Oxbow, near Aberdeen" 1925-52, where drainage area was 70.7 mi². Records published for both sites October 1951 to October 1952.

REVISED RECORDS.--WSP 1346: 1952. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401 ft National Geodetic Vertical Datum of 1929 (stadia traverse). Prior to Nov. 7, 1925, nonrecording gage at site 2.3 mi upstream at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1.5 mi upstream at datum 444.0 ft National Geodetic Vertical Datum of 1929 (levels by city of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at site 2.5 mi upstream at datum about 91 ft higher. Oct. 5, 1951, to Sept. 30, 1976, water-stage recorder on left bank at same site and datum.

REMARKS.--Records good. Since August 1972, flow regulated by Wynoochee Lake (station 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from August 1969 to September 1972 due to dam construction. No diversions above station.

AVERAGE DISCHARGE.--58 years, 830 ft³/s, 152.11 in/yr, 601,300 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft³/s Dec. 9, 1956, gage height, 16.95 ft, from rating curve extended above 9,000 ft³/s, minimum, 57 ft³/s Sept. 3, 4, 5, 1972, gage height, 4.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,370 ft³/s Dec. 4, gage height, 11.26 ft; minimum discharge, 272 ft³/s Oct. 1, 4, 5, gage height, 5.15 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	950	2170	524	760	1200	1490	365	317	560	350	405
2	286	704	2460	584	655	982	1570	360	317	690	350	620
3	277	683	4700	746	554	878	1390	355	313	620	345	590
4	277	878	7230	1160	524	846	966	350	313	590	340	566
5	272	1410	5150	3420	488	838	620	340	313	572	335	548
6	360	1350	2130	2910	530	910	572	345	313	518	335	542
7	385	1350	1010	5000	554	1640	536	440	308	360	335	536
8	350	1090	846	5150	512	3750	500	446	308	350	331	641
9	331	878	760	4730	1010	5910	488	410	326	345	331	910
10	313	697	739	5200	1550	4190	482	390	390	345	326	1050
11	299	602	690	3320	2910	2660	458	380	350	385	326	1020
12	295	578	809	2160	4140	1710	440	370	335	718	326	966
13	290	560	958	1500	3910	1610	430	360	326	2580	322	942
14	286	548	1590	1170	3870	1840	420	365	326	2280	322	926
15	281	641	3130	990	2990	1270	410	375	365	1270	322	823
16	308	1180	5000	934	2460	910	400	360	345	878	317	641
17	313	998	3670	958	3970	760	390	350	375	830	317	470
18	299	809	3070	1450	3290	620	365	345	452	683	317	482
19	295	788	2620	1920	2510	572	380	340	464	410	317	440
20	313	739	1910	1480	2810	536	375	340	405	400	317	365
21	620	690	1380	982	2410	512	370	335	400	385	313	365
22	2230	596	1420	846	3030	476	370	331	425	375	313	360
23	2470	488	1180	942	4520	506	370	331	425	365	313	355
24	2380	420	1020	1500	3640	482	420	326	440	360	313	355
25	1530	405	990	2170	1890	458	390	322	458	360	308	350
26	1480	430	894	2340	1500	476	410	326	446	375	308	355
27	2140	662	718	2210	1340	506	400	322	440	390	308	326
28	2170	1670	648	1500	1330	739	385	322	415	375	350	299
29	1840	2090	614	1080	---	1780	375	322	370	365	380	295
30	1220	2700	584	1050	---	1280	370	322	345	360	405	295
31	1160	---	542	918	---	1190	---	322	---	355	405	---
TOTAL	25342	27584	60632	60844	59557	42037	16542	10967	11125	19449	10297	16838
MEAN	817	919	1956	1963	2127	1356	551	354	371	627	332	561
MAX	2470	2700	7230	5200	4520	5910	1570	446	464	2580	405	1050
MIN	272	405	542	524	488	458	365	322	308	345	308	295
AC-FT	50270	54710	120300	120700	118100	83380	32810	21750	22070	38590	20420	33400
MEAN†	720	965	1883	1969	2159	1650	659	354	401	597	225	308
CFSM†	9.72	13.0	25.4	26.6	29.1	22.3	8.89	6.13	5.41	8.06	3.04	4.16
IN.†	11.21	14.53	29.30	30.64	30.33	25.68	9.91	7.07	6.04	9.29	3.50	4.63
AC-FT†	44290	57420	115800	121100	119900	101500	39180	27950	23880	36710	13850	18320

CAL YR 1982 TOTAL 330533 MEAN 906 MAX 7250 MIN 268 AC-FT 655600 MEAN† 904 CFSM† 12.2 IN.† 165.59 AC-FT† 654500
WTR YR 1983 TOTAL 361214 MEAN 990 MAX 7230 MIN 272 AC-FT 716500 MEAN† 994 CFSM† 13.4 IN.† 182.11 AC-FT† 719800

† Adjusted for change in contents in Wynoochee Lake.

BEST COPY AVAILABLE

12036650 ANDERSON CREEK NEAR MONTESANO, WA

LOCATION.--Lat 47°07'02", long 123°39'17", in SE¼NE¼ sec.22, T.19 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 70 ft upstream from Wynoochee Valley road bridge, 9.6 mi northwest of Montesano, and 1.0 mi upstream from mouth.

DRAINAGE AREA.--2.72 mi².

PERIOD OF RECORD.--August 1972 to current year.

REVISED RECORDS.--WDR WA-78-1: 1976, 1977.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 150 ft, from topographic map.

REMARKS.--Records good. Natural regulation by upstream beaver dams. No diversions above station.

AVERAGE DISCHARGE.--11 years, 14.6 ft³/s, 72.89 in/yr, 10,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 452 ft³/s Feb. 13, 1982, gage height, 8.53 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1630	*425	*8.31	Jan. 8	0015	210	5.72
Dec. 16	0030	229	5.91	Feb. 17	1500	157	5.24
Jan. 5	0930	346	7.53	Mar. 9	0445	188	5.50

Minimum discharge, 0.29 ft³/s Aug. 18, 20, 23, 26, 27, gage height, 3.39 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	8.4	44	6.4	12	15	32	3.4	1.7	4.8	1.6	1.4
2	.40	6.8	36	7.6	10	14	37	3.4	1.5	4.7	1.6	2.2
3	.40	6.0	266	17	8.8	11	36	3.4	1.3	3.5	1.7	1.2
4	.40	16	121	55	8.0	10	27	3.4	1.1	3.0	1.2	.90
5	.40	36	39	244	7.6	9.7	21	3.4	.98	2.5	1.1	.75
6	1.5	35	27	60	7.6	10	16	3.0	.95	2.4	.96	.65
7	3.4	28	19	72	8.0	17	12	4.6	.80	2.3	.88	.65
8	4.6	22	16	144	7.6	44	11	6.0	.73	2.3	.80	.65
9	3.6	16	13	64	14	126	9.7	5.0	.85	2.0	.80	.65
10	2.0	12	11	66	21	62	8.8	4.2	2.9	1.8	.78	4.6
11	1.1	10	9.7	48	78	41	8.0	3.9	1.9	2.2	.83	3.3
12	.95	8.4	11	30	86	29	7.6	3.5	1.6	6.7	.80	1.7
13	.80	7.2	9.2	20	72	27	6.8	3.2	1.3	31	.67	1.2
14	.65	6.4	19	14	48	37	6.8	4.1	1.1	23	.56	1.1
15	.65	6.0	66	11	38	42	6.4	6.1	1.4	17	.55	.95
16	.95	25	123	8.8	36	30	6.0	4.6	1.2	12	.51	.95
17	2.5	54	64	7.6	103	21	5.6	4.5	1.7	9.2	.53	.82
18	1.5	41	67	8.0	76	16	5.3	4.4	6.1	8.0	.51	3.4
19	.95	29	48	7.6	42	12	5.3	3.8	7.1	6.8	.45	2.5
20	.80	27	37	6.8	35	9.7	5.3	3.7	4.8	6.0	.40	1.6
21	1.8	24	31	6.4	30	8.4	5.0	3.5	3.5	5.7	.40	1.4
22	17	21	35	6.0	40	8.0	4.6	3.1	3.2	4.5	.40	1.2
23	7.6	17	31	9.7	61	7.6	5.0	2.7	3.0	4.0	.40	1.1
24	4.3	15	24	12	48	6.8	6.8	2.3	3.0	3.6	.49	1.1
25	3.4	12	19	18	34	6.4	5.3	2.0	2.7	3.3	.52	.97
26	4.3	11	15	38	26	6.0	5.0	1.9	2.4	3.1	.35	1.1
27	5.0	16	12	37	21	6.0	5.0	1.8	2.1	3.7	.41	1.5
28	15	36	10	31	17	7.6	4.6	1.5	1.9	3.4	1.2	1.1
29	32	40	8.8	25	---	47	4.6	1.5	2.2	2.6	1.8	1.0
30	16	53	8.0	21	---	50	4.2	1.4	2.1	2.1	1.1	.95
31	11	---	7.2	15	---	38	---	1.9	---	1.8	.86	---
TOTAL	146.35	645.2	1246.9	1116.9	995.6	775.2	323.7	105.2	67.11	189.0	25.16	42.59
MEAN	4.72	21.5	40.2	36.0	35.6	25.0	10.8	3.39	2.24	6.10	.81	1.42
MAX	32	54	266	244	103	126	37	6.1	7.1	31	1.8	4.6
MIN	.40	6.0	7.2	6.0	7.6	6.0	4.2	1.4	.73	1.8	.35	.65
CFSM	1.74	7.90	14.8	13.2	13.1	9.19	3.97	1.25	.82	2.24	.30	.52
IN.	2.00	8.82	17.05	15.28	13.62	10.60	4.43	1.44	.92	2.58	.34	.58
AC-FT	290	1280	2470	2220	1970	1540	642	209	133	375	50	84

CAL YR 1982 TOTAL 6224.52 MEAN 17.1 MAX 371 MIN .00 CFSM 6.29 IN. 85.13 AC-FT 12350
WTR YR 1983 TOTAL 5678.91 MEAN 15.6 MAX 266 MIN .35 CFSM 5.74 IN. 77.67 AC-FT 11260

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE¼SE¼ sec.27, T.18 N., R.8 W., Greys Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft upstream from Black Creek, 3.5 mi northwest of Montesano, and at mile 5.9.

DRAINAGE AREA.--155 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft, from topographic map.

REMARKS.--Water-discharge records excellent. City of Aberdeen diverted about 114 ft³/s for municipal supply at intake 2.2 mi upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction.

AVERAGE DISCHARGE.--27 years, 1,302 ft³/s, 943,300 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft³/s Jan. 19, 1968; maximum gage height, 20.54 ft Dec. 10, 1956; minimum discharge, 3.0 ft³/s part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,200 ft³/s Dec. 3, gage height, 13.53 ft; minimum, 161 ft³/s Oct. 1, 6, gage height, 2.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	1450	3680	806	1290	1960	2540	410	270	422	313	316
2	173	1000	3220	883	1120	1720	2890	405	267	802	305	490
3	173	887	8410	1280	944	1420	2650	397	261	789	307	587
4	167	1210	9880	2400	845	1310	2190	382	255	718	293	529
5	164	2020	7090	7610	774	1240	1430	370	250	609	288	497
6	201	2520	4450	5380	781	1330	1160	364	249	585	284	480
7	330	2160	2050	6980	977	1750	1020	464	244	451	278	471
8	335	1940	1660	9430	808	4080	896	617	240	348	274	461
9	307	1470	1310	7250	1170	8730	834	520	244	321	270	754
10	261	1240	1220	8380	2130	6840	826	467	347	309	265	1080
11	229	950	1090	5930	4600	4680	757	430	342	319	264	1200
12	209	845	1220	3930	6310	3220	706	409	300	706	261	1030
13	198	775	1240	2800	6230	2660	652	386	276	2480	256	972
14	191	720	1940	2160	5220	3200	612	391	264	3450	251	939
15	184	688	4250	1750	4850	2830	578	484	299	2170	248	912
16	194	1390	7700	1560	3700	1960	551	428	295	1350	244	726
17	253	2200	5950	1480	5580	1610	527	398	309	1140	238	516
18	233	1790	5180	1730	6040	1280	506	385	456	1030	236	525
19	209	1520	4440	2420	3880	1100	487	366	549	665	231	482
20	201	1470	3590	2230	4130	976	469	356	454	532	229	375
21	281	1320	2660	1590	3570	892	452	346	381	486	225	321
22	1620	1180	2810	1320	4130	836	442	337	391	435	223	305
23	2800	987	2460	1490	5820	818	465	326	393	402	221	296
24	2560	817	1980	1870	5970	798	585	315	410	380	221	289
25	2350	707	1770	3040	3580	717	531	304	440	382	221	283
26	1350	675	1650	3650	2620	695	501	293	424	393	216	283
27	2240	880	1320	3590	2280	743	504	286	403	446	213	288
28	2600	2090	1130	2760	2040	929	466	279	392	462	239	245
29	3110	3070	1030	1960	---	3200	442	273	356	377	364	224
30	1900	3940	952	1730	---	3280	425	269	316	340	316	217
31	1570	---	861	1560	---	2570	---	279	---	321	372	---
TOTAL	26754	43911	98193	100949	91289	69374	27094	11736	10077	23620	8166	16093
MEAN	863	1464	3168	3256	3260	2238	903	379	336	762	263	536
MAX	3110	3940	9880	9430	6310	8730	2890	617	549	3450	372	1200
MIN	161	675	861	806	774	695	425	269	240	309	213	217
AC-FT	53070	87100	194800	200200	181100	137600	53740	23280	19990	46850	16200	31920

CAL YR 1982 TOTAL 502960 MEAN 1378 MAX 13000 MIN 161 AC-FT 997600
WTR YR 1983 TOTAL 527256 MEAN 1445 MAX 9880 MIN 161 AC-FT 1046000

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Sediment records October 1961 to June 1965.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Interruptions in record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C Aug. 10, 1971; minimum, 1.0°C Jan. 9, 10, 1973, Jan. 7-9, 1974, Jan. 29, 1980.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 20.5°C May 28; minimum, 3.5°C Dec. 29-31.

TEMPERATURE, WATER (D.G. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	10.0	8.5	9.5	7.5	7.0	7.5	5.0	4.0	4.5
2	---	---	---	9.5	8.0	9.0	7.0	7.0	7.0	5.5	5.0	5.5
3	---	---	---	9.5	8.5	9.0	9.0	7.0	8.5	5.5	5.0	5.5
4	---	---	---	10.0	9.5	9.5	8.0	6.5	7.0	7.0	5.5	6.5
5	---	---	---	9.5	9.0	9.0	7.0	6.5	6.5	7.5	7.0	7.5
6	---	---	---	9.0	8.0	8.5	7.0	6.5	6.5	7.0	6.5	6.5
7	---	---	---	9.0	8.0	8.5	7.0	6.0	6.5	7.5	6.5	7.5
8	---	---	---	8.0	7.0	7.5	6.0	5.5	6.0	7.5	6.0	7.0
9	---	---	---	7.5	6.5	7.0	6.0	5.5	6.0	7.0	6.0	6.5
10	---	---	---	7.5	6.0	7.0	5.5	5.0	5.5	8.0	7.0	7.5
11	---	---	---	7.5	6.5	7.0	6.0	5.0	5.5	7.5	6.5	7.0
12	---	---	---	7.5	6.5	7.0	7.0	6.0	6.5	7.0	6.0	6.5
13	---	---	---	7.0	6.5	7.0	7.0	6.5	7.0	7.0	6.0	6.5
14	---	---	---	7.0	6.0	6.5	6.5	6.5	6.5	6.0	5.0	5.5
15	---	---	---	7.0	6.0	6.0	7.5	6.5	7.0	6.0	5.0	5.5
16	---	---	---	7.5	7.0	7.0	7.5	7.0	7.5	7.0	6.0	6.5
17	---	---	---	8.5	7.5	8.0	7.0	6.5	6.5	7.5	7.0	7.5
18	---	---	---	8.0	8.0	8.0	7.0	6.5	6.5	8.0	7.5	7.5
19	11.5	9.5	10.5	8.0	7.5	8.0	6.5	6.5	6.5	7.0	7.0	7.0
20	10.0	8.0	9.5	7.5	6.5	7.0	6.5	6.0	6.0	7.0	6.5	7.0
21	11.0	10.0	10.5	7.0	6.0	6.5	7.0	6.5	6.5	6.5	6.0	6.5
22	11.5	11.0	11.5	6.0	5.0	5.5	7.0	6.5	6.5	6.5	6.0	6.5
23	11.0	10.5	10.5	5.5	4.5	5.0	6.5	6.0	6.0	7.0	6.5	6.5
24	11.5	10.5	11.0	5.5	5.0	5.0	6.5	5.5	6.0	7.0	7.0	7.0
25	11.0	10.5	11.0	5.5	5.0	5.5	6.5	6.5	6.5	7.0	6.5	7.0
26	11.0	10.0	11.0	6.5	5.5	6.0	7.0	5.5	6.5	7.5	7.0	7.5
27	10.5	9.5	10.0	7.5	6.5	7.0	5.5	4.5	5.0	7.5	7.0	7.5
28	10.5	9.5	10.0	8.0	7.5	7.5	4.5	4.0	4.5	6.5	6.0	6.5
29	10.0	9.5	9.5	8.0	7.5	7.5	4.5	3.5	4.0	7.0	6.5	6.5
30	10.5	9.5	10.0	7.5	7.0	7.5	4.5	3.5	4.0	7.0	6.5	7.0
31	10.5	9.5	10.0	---	---	---	4.5	3.5	4.0	7.5	6.5	7.0
MONTH	---	---	---	10.0	4.5	7.5	9.0	3.5	6.0	8.0	4.0	6.5

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.0	6.0	7.5	7.0	7.0	8.0	7.0	7.5	13.0	11.5	12.0
2	6.5	5.5	6.0	9.0	7.5	8.0	8.0	7.0	7.5	13.0	10.5	11.5
3	6.5	5.5	6.0	9.0	8.0	8.5	9.0	7.0	8.0	12.0	11.0	11.5
4	6.5	5.0	5.5	8.5	7.5	8.0	9.5	7.0	8.5	13.5	10.0	11.5
5	6.5	5.0	6.0	8.0	7.5	7.5	10.5	7.5	9.5	13.5	11.0	12.0
6	6.5	6.0	6.5	8.5	7.5	8.0	10.0	8.0	9.5	13.0	11.0	12.0
7	7.0	6.0	6.5	8.5	8.0	8.0	11.0	8.5	9.5	12.0	11.0	11.5
8	6.5	6.0	6.0	8.0	7.5	8.0	10.5	8.0	9.0	11.5	10.0	10.5
9	7.0	6.0	6.5	9.0	8.0	8.5	9.0	8.0	8.5	12.0	9.0	10.5
10	7.0	6.5	6.5	8.5	8.0	8.5	9.5	7.5	8.0	13.5	10.0	11.5
11	7.5	7.0	7.0	8.5	7.0	8.0	10.0	7.0	8.5	14.0	11.0	12.5
12	8.0	7.0	7.5	8.5	7.5	8.0	10.5	7.5	9.0	15.5	11.0	13.5
13	7.5	7.0	7.5	8.0	7.5	8.0	11.5	7.5	9.5	16.5	12.0	14.0
14	7.0	6.5	7.0	8.0	7.5	8.0	12.0	8.5	10.0	14.0	11.0	12.5
15	7.5	6.5	7.0	8.5	7.0	8.0	12.5	8.5	10.5	13.5	10.0	12.0
16	7.5	7.0	7.5	9.0	7.0	8.0	13.0	9.5	11.5	12.5	11.5	12.0
17	8.0	7.5	7.5	10.0	7.5	9.0	13.5	9.5	12.0	12.5	10.5	11.5
18	7.5	7.0	7.5	10.0	7.5	8.5	14.0	11.0	12.5	15.5	11.0	13.5
19	7.0	7.0	7.0	10.0	8.0	9.0	13.5	11.5	12.5	16.5	12.0	14.0
20	8.0	7.0	7.5	10.0	7.5	9.0	13.0	10.5	12.0	15.5	13.0	14.0
21	7.5	6.5	7.0	9.5	8.5	9.0	13.5	10.0	11.5	15.5	12.5	14.0
22	8.5	7.5	8.0	10.0	8.5	9.5	11.0	10.5	10.5	17.5	12.5	15.0
23	8.5	8.0	8.0	10.0	9.0	9.5	13.5	10.0	11.5	19.0	14.0	16.5
24	8.0	7.5	7.5	10.5	8.0	9.0	13.0	10.5	12.0	19.0	14.5	17.0
25	8.0	7.0	7.5	10.0	8.5	9.5	12.0	9.5	10.5	19.0	15.0	17.0
26	8.5	7.5	8.0	9.0	8.0	8.5	13.0	10.0	11.5	18.0	14.0	16.0
27	8.0	5.5	7.5	9.5	8.0	8.5	14.0	10.0	12.0	18.5	13.5	16.5
28	7.5	7.0	7.0	9.0	8.0	8.5	14.5	10.5	12.5	20.5	15.5	18.0
29	---	---	---	8.5	8.0	8.0	14.0	11.5	12.5	19.5	16.5	17.5
30	---	---	---	9.0	7.5	8.5	15.0	11.5	13.5	16.5	14.0	15.5
31	---	---	---	9.5	7.5	8.5	---	---	---	18.0	13.5	14.5
MONTH	8.5	5.0	7.0	10.5	7.0	8.5	15.0	7.0	10.5	20.5	9.0	13.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.0	14.5	15.5							---	---	---
2	16.0	13.0	14.5							---	---	---
3	15.5	12.5	14.0							---	---	---
4	14.5	13.0	13.5							---	---	---
5	16.0	13.5	14.5							---	---	---
6	17.0	14.0	15.5							---	---	---
7	17.5	14.0	15.5							---	---	---
8	15.5	13.5	14.5							---	---	---
9	17.0	13.0	14.5							---	---	---
10	14.5	13.0	14.0							---	---	---
11	15.0	13.0	14.0							---	---	---
12	16.0	13.0	14.5							---	---	---
13	16.0	13.0	14.0							---	---	---
14	17.0	14.0	15.5							15.0	14.0	14.5
15	17.5	14.5	15.5							14.5	13.0	14.0
16	16.0	13.0	14.5							15.0	13.5	14.0
17	16.5	13.5	15.0							14.5	12.5	13.5
18	17.5	14.0	15.5							14.0	12.5	13.0
19	17.5	15.0	16.0							14.0	11.0	12.5
20	16.5	14.5	15.5							14.5	11.0	12.5
21	15.5	14.0	14.5							15.5	11.5	13.5
22	14.5	13.5	14.0							16.0	12.5	14.0
23	14.0	10.5	11.5							16.0	13.0	14.5
24	---	---	---							15.0	14.0	14.5
25	---	---	---							16.0	13.0	14.5
26	---	---	---							14.0	12.5	13.5
27	---	---	---							14.0	11.0	12.5
28	---	---	---							14.5	11.0	12.5
29	---	---	---							14.0	10.5	12.0
30	---	---	---							14.0	10.0	12.0
31	---	---	---							---	---	---
MONTH	---	---	---							---	---	---

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'46", long 123°37'23", in SW¼ sec.6, T.24 N., R.7 W., Jefferson County, Hydrologic Unit 17100102, Olympic National Park, on right bank 15.5 mi northeast of Amanda Park, and at mile 5.2.

DRAINAGE AREA.--74.1 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1964 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 620 ft, from topographic map.

REMARKS.--Water-discharge records fair except those above 4,000 ft^3/s and period of no gage-height record, which are poor. No regulation or diversion upsream from station.

AVERAGE DISCHARGE.--18 years, 887 ft^3/s, 162.56 in/yr. 642,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft^3/s Dec. 3, 1982, gage height, 15 ft, from floodmarks, from rating curve extended above 4,000 ft^3/s; minimum, 103 ft^3/s Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft^3/s and maximum (*) from rating curve extended above 4,000 ft^3/s:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	unknown	*30,000	a*15.0	July 13	0800	9,400	10.19
Mar. 9	0600	14,200	11.48				

Minimum discharge, 134 ft^3/s Oct. 1.

a From floodmarks.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	1040	1250	400	670	1000	950	727	1320	1440	695	1070
2	196	809	1200	500	600	920	895	682	1180	1420	613	789
3	176	802	15000	700	530	850	753	727	1090	974	576	400
4	148	1540	5000	1600	500	827	682	682	1020	895	535	333
5	142	1640	2000	3900	470	760	632	695	1010	950	546	292
6	934	1200	1500	2700	450	767	632	714	1110	880	535	262
7	739	1010	1100	3600	500	1150	607	974	1300	782	546	245
8	636	854	870	4800	450	3160	552	734	1440	747	558	245
9	534	732	740	3200	800	7860	517	613	1460	701	500	237
10	405	654	650	4900	650	3330	489	570	2560	721	466	1190
11	323	600	650	2600	2000	1930	455	601	1420	2000	438	657
12	269	558	900	1600	6000	1640	427	676	1130	3040	427	395
13	232	516	800	1250	3700	2290	405	753	1050	4650	444	324
14	213	488	1000	1000	2100	2300	395	789	1120	2250	444	292
15	202	477	2500	900	1600	1450	405	714	1490	1480	395	265
16	416	636	5000	800	1800	1150	449	689	1120	1210	371	254
17	360	840	3000	750	2000	972	535	721	1690	1120	366	237
18	273	820	2100	3000	2200	857	638	740	1640	1110	357	366
19	232	780	1700	1800	2400	775	753	849	1320	1030	338	271
20	213	700	1300	1200	5000	714	727	1140	1050	1010	324	228
21	1140	600	1100	950	2300	682	632	1130	966	934	314	210
22	6820	470	950	850	2600	689	601	1130	942	880	310	204
23	1930	420	850	800	6500	753	747	1460	1020	895	310	194
24	3710	390	750	950	4000	657	865	1700	895	842	296	188
25	2080	380	700	1300	2500	594	632	1540	895	767	279	178
26	3610	420	650	2000	1600	588	558	1350	911	714	266	198
27	1810	1000	600	1800	1300	619	529	1450	958	895	262	191
28	2450	2300	550	1300	1100	676	570	1900	919	782	466	168
29	1740	1800	500	1100	---	1420	638	2430	888	682	444	158
30	1100	1400	450	900	---	1560	714	1840	865	714	352	150
31	1220	---	430	730	---	1120	---	1500	---	767	292	---
TOTAL	34408	25876	55790	53880	56320	44060	18384	32220	35779	37282	13065	10191
MEAN	1110	863	1800	1738	2011	1421	613	1039	1193	1203	421	340
MAX	6820	2300	15000	4900	6500	7860	950	2430	2560	4650	695	1190
MIN	135	380	430	400	450	588	395	570	865	682	262	150
CFSM	15.0	11.6	24.3	23.5	27.1	19.2	8.27	14.0	16.1	16.2	5.68	4.59
IN.	17.27	12.99	28.01	27.05	28.27	22.12	9.23	16.18	17.96	18.72	6.56	5.12
AC-FT	68250	51330	110700	106900	111700	87390	36460	63910	70970	73950	25910	20210

CAL YR 1982 TOTAL 351216 MEAN 962 MAX 15000 MIN 135 CFSM 13.0 IN. 176.32 AC-FT 696600
WTR YR 1983 TOTAL 417255 MEAN 1143 MAX 15000 MIN 135 CFSM 15.4 IN. 209.47 AC-FT 827600

NOTE.--No gage-height record Nov. 18 to Mar. 2.

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to September 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1982											
17...	1200	894	70	6.8	4.0	1.5	12.6	100	<1	K7	33
MAR , 1983											
02...	1130	926	70	7.3	5.5	.50	11.9	--	<1	--	32
MAY											
17...	1030	739	64	7.6	6.0	.50	12.0	98	K5	K7	30
AUG											
10...	1130	477	81	8.4	11.5	.70	10.5	98	K3	K9	33

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV , 1982											
17...	5	12	.65	1.3	8	.1	.20	28	10	.90	<.10
MAR , 1983											
02...	4	12	.60	1.5	9	.1	.30	28	8.8	1.1	<.10
MAY											
17...	4	11	.50	1.3	9	.1	.20	26	8.6	.90	<.10
AUG											
10...	4	12	.62	1.4	9	.1	.20	29	9.0	.70	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1982											
17...	4.4	43	46	.06	104	<.10	.100	.40	.020	.020	<.010
MAR , 1983											
02...	4.8	39	46	.05	98	<.10	<.060	.40	.010	.010	.010
MAY											
17...	4.1	38	45	.05	76	<.10	.080	.30	.030	.020	.020
AUG											
10...	4.4	40	46	.05	52	<.10	<.060	.60	.030	.020	<.010

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

BEST COPY AVAILABLE

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK,WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)
NOV , 1982											
17...	4	9.7	--	--	--	--	--	--	--	--	--
MAR , 1983											
02...	8	20	--	--	--	--	--	--	--	--	--
MAY											
17...	1	2.0	20	<1	4	<.5	1	<1	<3	5	91
AUG											
10...	2	2.6	<10	<1	7	<.5	<1	<1	<3	4	3

DATE	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
NOV , 1982											
17...	--	--	--	--	--	--	--	--	--	--	--
MAR , 1983											
02...	--	--	--	--	--	--	--	--	--	--	--
MAY											
17...	<1	5	4	.1	<10	1	1	<1	82	<6	29
AUG											
10...	9	12	<1	<.1	<10	7	<1	<1	--	<6	7

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
AUG , 1983									
10...	1130	<1.3	<.4	<.6	<.4	<.5	<.4	.04	.04

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA

LOCATION.--Lat 47°27'28", long 123°53'17", in SW¼NE¼ sec.25, T.23 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at outlet of Quinault Lake, 50 ft downstream from Olympic Highway bridge on U. S. Highway 101, 2.0 mi southwest of Quinault, and at mile 33.4.

DRAINAGE AREA.--264 mi².

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1316: 1923, 1925, 1933. WSP 1635: 1917.

GAGE.--Water-stage recorder. Datum of gage is 184.60 ft National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Prior to Sept. 30, 1916, nonrecording gages at sites within 4 mi northeast of present site, at different datum. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft downstream from present site at datum 0.36 ft higher than present datum.

REMARKS.--Records good. Flow affected by natural storage in Quinault Lake. No diversions above station.

AVERAGE DISCHARGE.--72 years, 2,856 ft³/s, 146.91 in/yr, 2,069,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,200 ft³/s Nov. 4, 1955, gage height, 20.51 ft; minimum, 276 ft³/s Sept. 12, 1944, gage height, 1.96 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of approximately 22 ft, present datum, discharge, 52,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2100	*32,000	*15.65	Feb. 13	0100	16,400	10.[illegible]
Dec. 16	1800	14,100	9.80	Feb. 23	2200	14,500	9.96
Jan. 10	1600	17,200	10.86	Mar. 9	1600	16,500	10.65

Minimum discharge, 467 ft³/s Oct. 1, gage height, 2.21 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	473	4710	5790	1770	3200	4040	5120	1780	3340	2270	1730	1130
2	495	4010	4710	1740	2810	3670	4860	1800	2980	3090	1660	1820
3	501	3430	18000	1950	2520	3350	4380	1810	2730	3100	1610	1820
4	495	3740	23700	2430	2290	3100	3770	1790	2470	2770	1490	1610
5	478	4430	12700	8100	2090	2910	3280	1770	2310	2540	1430	1400
6	611	5330	7700	9360	2000	2940	2900	1770	2210	2400	1350	1250
7	1270	5010	5330	9460	2060	3400	2630	2100	2240	2250	1310	1120
8	1490	4570	4180	15900	1980	5590	2400	2460	2400	2090	1290	1030
9	1540	3990	3520	13200	2110	14100	2220	2350	2580	1940	1280	953
10	1440	3320	3040	16200	2690	13900	2090	2150	3200	1840	1230	1060
11	1300	2870	2690	14000	4760	10500	1940	1980	3530	2030	1180	1490
12	1190	2510	2970	9380	13600	7580	1820	1890	3170	4350	1140	1560
13	1050	2240	3410	6640	15000	6880	1710	1850	2770	7320	1100	1410
14	953	2010	3440	5070	10700	8810	1610	1910	2520	8570	1080	1280
15	872	1850	5350	4170	7930	7720	1520	2000	2670	6620	1040	1170
16	832	2100	11700	3630	6990	5890	1470	1940	2710	4990	1010	1090
17	912	2500	12300	3380	8330	4660	1460	1900	2770	4040	986	1000
18	928	2620	10100	4520	10300	3930	1510	1860	3260	3540	962	987
19	888	2610	8430	6340	8170	3400	1610	1840	3570	3090	928	987
20	832	2510	6380	5580	9230	3000	1750	1940	3340	2910	896	937
21	864	2310	5010	4540	7880	2700	1790	2210	2980	2730	872	868
22	5460	2100	4540	3850	7630	2510	1770	2340	2700	2480	832	840
23	9060	1910	4090	3570	12100	2510	1780	2500	2580	2330	824	793
24	8290	1760	3550	3910	13300	2520	2030	2830	2500	2220	808	763
25	8170	1630	3190	4920	9550	2390	2110	3150	2350	2140	778	732
26	8910	1580	3000	6790	7170	2300	2010	3150	2250	2010	741	710
27	9800	1830	2710	8430	5750	2370	1880	3040	2170	1970	732	703
28	7930	4270	2440	7080	4710	2510	1770	3100	2160	1990	747	681
29	8690	6490	2220	5350	---	3890	1720	3530	2100	1900	962	660
30	6660	6360	2040	4350	---	5770	1720	3880	2070	1800	1050	624
31	5100	---	1890	3700	---	5970	---	3660	---	1740	1030	---
TOTAL	97474	96500	190120	199310	186850	154810	68630	72280	80630	95060	34084	32406
MEAN	3144	3217	6133	6429	6673	4994	2288	2332	2688	3066	1099	1083
MAX	9800	6490	23700	16200	15000	14100	5120	3880	3570	8570	1730	1820
MIN	473	1580	1890	1740	1980	2300	1460	1770	2070	1740	732	624
CFSM	11.9	12.2	23.2	24.4	25.3	18.9	8.67	8.83	10.2	11.6	4.16	4.10
IN.	13.73	13.60	26.79	28.08	26.33	21.81	9.67	10.18	11.36	13.39	4.80	4.58
AC-FT	193300	191400	377100	395300	370600	307100	136100	143400	159900	188600	67610	64460

CAL YR 1982 TOTAL 1172628 MEAN 3213 MAX 23700 MIN 473 CFSM 12.2 IN. 165.23 AC-FT 2326000
WTR YR 1983 TOTAL 1308245 MEAN 3584 MAX 23700 MIN 473 CFSM 13.6 IN. 184.34 AC-FT 2595000

12040500 QUEETS RIVER NEAR CLEARWATER, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°32'17", long 124°18'52", in NE¼SW¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinault Indian Reservation, on right bank 2.4 mi downstream from mouth of Clearwater River, 0.8 mi east of Queets, and at mile 4.6.

DRAINAGE AREA.--445 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1930 to November 1949, water years 1950-67 (annual maximum), April 1974 to current year.

REVISED RECORDS.--WSP 1316: 1931-49(m).

GAGE.--Water-stage recorder. Datum of gage is 14.5 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Sept. 15, 1930, to Jan. 22, 1935, at datum 4.0 ft higher.

REMARKS.--Water-discharge records good except those for periods of no gage-height record Oct. 1 to Nov. 19, May 3 to June 16, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--28 years (water years 1931-49, 1975-83), 4,265 ft^3/s, 130.15 in/yr, 3,090,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,400 ft^3/s Jan. 22, 1935, gage height, 27.0 ft, from floodmarks, present datum; minimum, 368 ft^3/s Sept. 9, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 42,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	1700	*94,400	*23.74	Feb. 12	0600	46,300	18.00
Jan. 5	unknown	44,800	17.79	Feb. 20	0500	44,800	17.79
Jan. 8	unknown	50,400	18.59	Mar. 9	0800	45,500	17.89
Jan. 10	unknown	48,600	18.34				

Minimum observed discharge, 59[illegible] ft^3/s Oct. 1, gage height, 5.93 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	610	6200	9160	2820	3750	5210	9000	1590	3000	2880	1650	2280
2	710	5200	7120	3150	3360	5050	7000	1550	2700	4730	1520	6010
3	770	4300	56400	5930	3060	4310	5700	1550	2350	3140	1550	2550
4	680	7000	21400	7600	2810	3930	4800	1530	2200	2500	1390	1850
5	660	8900	8980	28400	2600	3590	4300	1500	2070	2260	1300	1550
6	2690	8400	6650	14200	2820	4110	3800	1600	2030	2130	1290	1350
7	4490	7300	5400	18900	3820	6570	3400	2000	2090	1980	1240	1230
8	2460	6000	4620	38900	3070	14900	3120	2400	2260	1850	1270	1130
9	2400	5180	4060	21400	5350	32200	2830	2300	2650	1710	1220	1100
10	2180	4350	3650	41100	6700	16300	2880	2100	5100	1630	1140	2560
11	1940	3800	3840	23200	18600	10800	2740	1950	3900	5480	1100	3920
12	1700	3400	7230	12200	38600	8020	2430	1830	3000	18300	1060	2220
13	1500	3100	5150	8690	21400	10400	2210	1800	2400	20300	1040	1770
14	1400	2900	14900	6640	12800	17900	2050	1850	2230	13300	1050	1560
15	1280	2700	21200	5450	9980	10100	1930	1900	2570	8360	1010	1390
16	1400	4000	21600	4720	11100	6730	1860	1900	2260	5600	952	1290
17	2200	5600	17900	4410	15800	5200	1850	1850	2580	4400	917	1220
18	1760	5060	15900	7860	13600	4500	1860	1800	4200	3790	909	1590
19	1370	5250	9930	7370	14500	4100	1910	1800	4260	3320	882	1590
20	1180	4650	7690	5610	30700	3650	1890	2050	3240	3090	847	1220
21	2100	3990	6700	4620	12700	3300	1780	2250	2620	2940	821	1110
22	23000	3360	6500	4020	13600	3000	1660	2250	2290	2530	804	1050
23	12500	2930	5600	4840	24700	3000	1660	2500	2360	2330	812	997
24	20000	2610	5200	7300	14900	3000	2180	2750	2400	2200	795	952
25	14000	2370	5200	8550	9660	2830	2430	3000	2200	2030	762	917
26	19000	2390	4900	11300	8860	2740	1850	2800	2070	1930	730	900
27	14000	4990	4350	10900	7640	2780	1790	2500	1940	2000	714	988
28	10400	15200	4050	7360	6070	3400	1600	3000	1890	2260	997	873
29	9000	12500	3630	5640	---	5000	1570	3600	1770	1820	2140	821
30	7300	13000	3290	5070	---	8500	1580	4100	1750	1670	1450	779
31	6600	---	3030	4300	---	11000	---	3500	---	1680	1100	---
TOTAL	171280	166630	305230	342450	322550	226120	85660	69200	78380	134140	34462	48767
MEAN	5525	5554	9846	11050	11520	7294	2855	2232	2613	4327	1112	1626
MAX	23000	15200	56400	41100	38600	32200	9000	4100	5100	20300	2140	6010
MIN	610	2370	3030	2820	2600	2740	1570	1500	1750	1630	714	779
CFSM	12.4	12.5	22.1	24.8	25.9	16.4	6.42	5.02	5.87	9.72	2.50	3.65
IN.	14.32	13.93	25.52	28.63	26.96	18.90	7.16	5.78	6.55	11.21	2.88	4.08
AC-FT	339700	330500	605400	679200	639800	448500	169900	137300	155500	266100	68360	96730

CAL YR 1982 TOTAL 1856914 MEAN 5087 MAX 56400 MIN 610 CFSM 11.4 IN. 155.23 AC-FT 3683000
WTR YR 1983 TOTAL 1984869 MEAN 5438 MAX 56400 MIN 610 CFSM 12.2 IN. 165.93 AC-FT 3937000

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1982											
18...	0930	5150	56	7.1	4.5	5.0	12.4	95	K30	K4	20
FEB , 1983											
15...	1230	9830	45	7.9	7.5	23	11.2	94	K10	22	17
MAY											
18...	1000	1650	75	7.2	11.0	3.0	11.1	99	K8	E22	25
AUG											
09...	1350	1280	68	8.3	17.5	2.4	9.6	101	K4	48	28

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV , 1982											
18...	2	6.4	.90	2.6	22	.3	.40	18	9.0	3.8	<.10
FEB , 1983											
15...	0	5.6	.80	2.3	22	.2	.30	17	5.4	2.8	<.10
MAY											
18...	2	8.4	.89	2.6	18	.2	.30	23	7.7	2.6	<.10
AUG											
09...	2	9.5	1.1	2.7	17	.2	.30	26	8.0	2.0	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1982											
18...	5.4	39	40	.05	542	.15	.100	.40	.020	.010	.020
FEB , 1983											
15...	5.1	34	33	.05	902	.10	.070	.30	.040	.020	.020
MAY											
18...	5.3	39	42	.05	174	.10	.060	.30	.020	.010	.010
AUG											
09...	5.0	39	44	.05	135	<.10	.040	.70	.040	.020	.010

E Estimated value.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV , 1982											
18...	70	1	15	1	<1	<1	<3	15	33	6	5
FEB , 1983											
15...	40	<1	12	<.5	<1	<1	<3	3	18	<1	<4
MAY											
18...	20	<1	12	<.5	1	<1	<3	2	31	<1	5
AUG											
09...	10	<1	15	.5	<1	<1	<3	4	25	1	12

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1982											
18...	15	.2	<10	3	<1	<1	54	<6	15	8	111
FEB , 1983											
15...	6	<.1	<10	<1	<1	<1	45	<6	17	--	--
MAY											
18...	12	.2	<10	2	1	<1	49	<6	38	5	22
AUG											
09...	5	<.1	<10	<1	<1	<1	76	<6	11	3	10

12041200 HOH RIVER AT U.S. HIGHWAY 101, NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 124°14'59", in NE¼NE¼ sec.33, T.27 N., R.12 W., Jefferson County, Hydrologic Unit 17100101, on left bank 250 ft downstream from U.S. Highway 101, 1.0 mi downstream from Hell Roaring Creek, 11.5 mi southeast of Forks, and at mile 15.4.

DRAINAGE AREA.--253 mi².

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 163.64 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of no gage-height record, April 6 to May 18, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--23 years, 2,568 ft³/s, 137.84 in/yr, 1,861,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,600 ft³/s Dec. 17, 1979, gage height, 19.08 ft from rating curve extended above 30,100 ft³/s on basis of slope-area measurement at gage height 17.74 ft; minimum, 396 ft³/s Nov. 4, 1974; minimum gage height, 2.40 ft Sept. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 22	1800	22,000	12.37	Jan. 10	0600	22,200	12.43
Dec. 3	1600	*47,900	*18.32	Feb. 12	0500	21,600	12.24
Dec. 16	1200	16,300	10.65	Mar. 9	1000	20,000	11.80
Jan. 8	0300	19,500	11.63				

Minimum discharge, 470 ft³/s Oct. 5, 6, gage height, 2.75 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	512	3600	3350	1780	2200	2860	3320	1240	2240	2170	1880	1870
2	614	2850	2890	2210	2000	2770	3500	1230	2020	3090	1650	2940
3	664	2540	26200	3010	1800	2540	3140	1200	1880	2390	1640	1690
4	573	4550	11200	3480	1700	2430	2390	1190	1710	2050	1440	1390
5	548	4930	5710	10600	1600	2360	2350	1180	1590	2070	1340	1170
6	1530	4720	4230	5810	1700	2370	2300	1300	1590	2050	1370	1000
7	2300	4270	3510	9150	2140	2670	2100	1700	1710	1840	1370	929
8	1470	3550	3090	14500	2090	5250	1900	1730	1990	1700	1540	843
9	1440	2860	2800	10700	2790	15000	1740	1650	2070	1590	1500	786
10	1200	2450	2600	18900	2970	8210	1600	1500	3230	1530	1320	1530
11	1080	2180	2430	9660	8530	5300	1500	1440	2770	3630	1240	2330
12	955	2000	3870	6050	17800	3990	1440	1400	2160	8260	1200	1480
13	835	1840	3360	4570	10100	4800	1380	1390	1840	8500	1220	1230
14	794	1710	3980	3630	6130	7850	1340	1400	1820	6880	1310	1090
15	770	1640	6480	3120	4700	4760	1270	1390	2410	4780	1230	964
16	868	2580	12000	2820	4920	3580	1230	1340	2250	3410	1090	894
17	1220	2940	8500	2730	6990	2960	1220	1280	2710	2850	1050	843
18	911	2400	7500	4450	6880	2620	1250	1240	3010	2610	1070	911
19	770	2340	6570	4140	6480	2300	1300	1230	2850	2470	1040	860
20	700	2290	4570	3140	11700	2200	1300	1410	2340	2290	973	723
21	1060	2070	3750	2680	5940	2140	1300	1640	2030	2180	920	685
22	13900	1840	3680	2430	6170	2120	1330	1620	1870	2030	946	693
23	7150	1690	3170	2580	10900	2150	1380	1770	2030	1990	1000	685
24	12000	1590	2850	3220	8160	2130	1500	2000	2000	1940	982	664
25	7970	1510	2910	3700	5320	2090	1490	2180	1890	1790	903	642
26	11000	1550	2820	5320	4530	2070	1400	1950	1870	1760	852	642
27	7800	2430	2500	5900	3850	2110	1270	1890	1890	1830	843	708
28	5710	5600	2320	3980	3200	2360	1200	2120	1920	2160	1030	628
29	5250	4990	2170	3120	---	3840	1200	2890	1780	1740	1740	560
30	3750	4230	1990	2730	---	4340	1230	3030	1830	1610	1440	524
31	3580	---	1850	2400	---	4080	---	2510	---	1810	1280	---
TOTAL	98924	85740	154850	162510	153290	116250	51070	51040	63300	87000	38409	31904
MEAN	3191	2858	4995	5242	5475	3750	1702	1646	2110	2806	1239	1063
MAX	13900	5600	26200	18900	17800	15000	3500	3030	3230	8500	1880	2940
MIN	512	1510	1850	1780	1600	2070	1200	1180	1590	1530	843	524
CFSM	12.6	11.3	19.7	20.7	21.6	14.8	6.73	6.51	8.34	11.1	4.90	4.20
IN.	14.55	12.61	22.77	23.89	22.54	17.09	7.51	7.50	9.31	12.79	5.65	4.69
AC-FT	196200	170100	307100	322300	304100	230600	101300	101200	125600	172600	76180	63280

CAL YR 1982 TOTAL 1037204 MEAN 2842 MAX 26200 MIN 512 CFSM 11.2 IN. 152.51 AC-FT 2057000
WTR YR 1983 TOTAL 1094287 MEAN 2998 MAX 26200 MIN 512 CFSM 11.8 IN. 160.90 AC-FT 2171000

12043163 SOOES RIVER BELOW MILLER CREEK, NEAR OZETTE, WA

LOCATION.--Lat 48°15'58", long 124°37'30", in NE¼NE¼ sec. 21, T.32 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank at downstream side on Crown Zellerback logging road, 0.6 mi downstream from Miller Creek, and 8 mi north of Ozette.

DRAINAGE AREA.--32.0 mi².

PERIOD OF RECORD.--March 1976 to current year.

REVISED RECORDS.--WDR WA-77-1: 1976(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 70 ft, from topographic map.

REMARKS.--Records good except those for period of unstable control July 16 to Aug. 31, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--7 years, 202 ft³/s, 85.72 in/yr, 146,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft³/s, revised, Jan. 23, 1982, gage height, 15.08 ft; minimum, 3.4 ft³/s Aug. 8-11, Sept. 3-4, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 28	1400	2,500	11.19	Feb. 11	2300	2,610	11.34
Dec. 3	1100	2,820	11.65	Feb. 19	2300	3,130	12.08
Jan. 7	2100	3,150	12.11	July 11	2400	*4,910	*14.30
Jan. 10	0800	3,350	12.36				

Minimum discharge, 15 ft³/s Oct. 1, gage height, 5.01 ft.

REVISIONS.--The maximum discharge for the water year 1982 has been revised to 5,610 ft³/s Jan. 23, 1982, gage height, 15.08 ft, superseding figure published in the report for 1982. Peak discharge of Feb. 13, 1982 (2200 hours) has been revised to 3,590 ft³/s, gage height, 12.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	221	318	105	115	178	263	35	22	83	60	194
2	44	139	284	199	104	152	364	34	22	186	59	176
3	34	122	1700	315	94	136	447	36	22	81	60	85
4	25	337	549	633	87	120	214	36	19	62	58	76
5	22	465	290	1230	80	110	156	33	20	52	55	64
6	261	465	212	406	85	110	129	32	20	52	52	67
7	364	409	174	1580	152	205	115	81	19	63	52	71
8	143	261	148	1300	122	729	99	94	17	45	50	71
9	109	164	132	1650	340	1440	93	66	19	40	49	74
10	76	129	118	2570	689	971	102	56	69	42	47	370
11	60	107	109	913	1700	385	99	46	50	1980	47	199
12	50	93	418	482	1970	271	85	41	42	1820	47	107
13	44	84	304	358	1050	503	76	37	31	1080	46	84
14	38	76	577	246	563	761	69	38	26	479	45	74
15	35	76	836	197	437	284	63	59	38	236	44	69
16	41	641	980	168	489	192	59	42	34	162	44	67
17	50	376	797	164	895	152	55	38	56	127	42	64
18	37	199	818	256	641	129	51	42	102	107	42	110
19	33	176	689	205	1030	112	47	39	71	96	41	90
20	33	168	334	162	1580	99	45	35	51	91	40	71
21	83	232	295	145	461	90	46	35	40	88	39	66
22	741	166	415	127	629	87	44	32	34	80	39	60
23	279	123	329	130	1350	96	41	30	40	76	39	56
24	531	105	234	219	605	88	63	28	44	71	40	55
25	725	93	451	276	329	77	50	26	55	69	40	54
26	827	120	329	337	397	77	47	25	59	69	39	54
27	507	276	205	261	334	87	51	24	42	81	39	56
28	653	1160	166	192	219	122	42	24	36	81	49	51
29	281	669	143	154	---	520	48	22	34	69	69	50
30	172	406	127	148	---	304	36	21	35	64	60	49
31	225	---	115	132	---	465	---	21	---	62	50	---
TOTAL	6538	8058	12596	15260	16547	8852	3099	1208	1169	7694	1483	2734
MEAN	211	269	406	492	591	286	103	39.0	39.0	248	47.8	91.1
MAX	827	1160	1700	2570	1970	1440	447	94	102	1980	69	370
MIN	15	76	109	105	80	77	36	21	17	40	39	49
CFSM	6.59	8.41	12.7	15.4	18.5	8.94	3.22	1.22	1.22	7.75	1.49	2.85
IN.	7.60	9.37	14.64	17.74	19.24	10.29	3.60	1.40	1.36	8.94	1.72	3.18
AC-FT	12970	15980	24980	30270	32820	17560	6150	2400	2320	15260	2940	5420

CAL YR 1982 TOTAL 85646.1 MEAN 235 MAX 3710 MIN 3.4 CFSM 7.34 IN. 99.56 AC-FT 169900
WTR YR 1983 TOTAL 85238 MEAN 234 MAX 2570 MIN 15 CFSM 7.31 IN. 99.09 AC-FT 169100

12043300 HOKO RIVER NEAR SEKIU, WA

LOCATION.--Lat 48°14'30", long 124°22'57", in NE¼SW¼ sec.28, T.32 N., R.13 W., Clallam County, Hydrologic Unit 17110021, on right bank 2.2 mi upstream from Little Hoko River, and 4.0 mi southwest of Sekiu.

DRAINAGE AREA.--51.2 mi².

PERIOD OF RECORD.--July 1962 to September 1974, water years 1976-78 (annual maximum), water year 1983 (June to October seasonal record).

GAGE.--Water-stage recorder. Altitude of gage is 50 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1963-74), 408 ft³/s, 108.22 in/yr, 295,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft³/s Dec. 25, 1972, gage height, 14.17 ft, from rating curve extended above 2,100 ft³/s, on basis of slope-area measurement at gage height, 12.49 ft; minimum, 12 ft³/s Aug. 30, 1967; minimum gage height, 0.97 ft Sept. 15-17, 1973.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge during period July 13 to October 1983, 2,290 ft³/s July 13, gage height, 6.25 ft minimum discharge during period July 13 to October 1983, 34 ft³/s Oct. 15, 16, 18, 19, gage height, 1.29 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JUNE TO OCTOBER 1983
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1		---	80	79	41
2		---	77	171	40
3		---	80	85	50
4		---	72	66	85
5		---	65	56	55
6		---	61	53	47
7		---	57	53	43
8		---	54	48	41
9		---	52	45	41
10		---	50	171	40
11		---	49	184	38
12		*1970	48	116	37
13		1800	46	96	36
14	*54	1270	43	83	35
15		755	41	75	34
16		501	40	73	34
17		370	40	66	35
18		282	39	116	34
19		231	37	114	37
20		203	36	85	76
21		179	35	72	80
22		151	35	62	309
23		131	34	59	142
24		122	34	55	113
25		111	34	52	170
26		118	34	52	129
27		124	34	52	190
28		120	36	47	146
29		102	52	44	127
30		93	50	42	306
31		87	38	---	332
TOTAL	---	---	1483	2372	2918
MEAN	---	---	47.8	79.1	94.1
MAX	---	---	80	184	332
MIN	---	---	34	42	34
CFSM	---	---	.93	1.54	1.84
IN.	---	---	1.08	1.72	2.12
AC-FT	---	---	2940	4700	5790

* Discharge measurement.

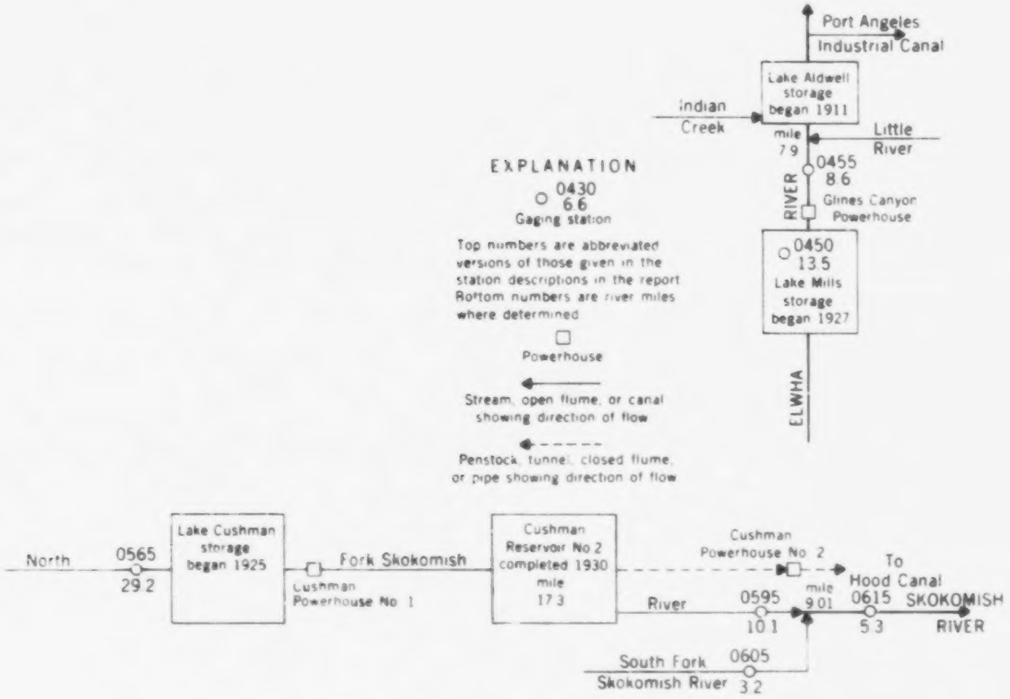
Port Angeles
Industrial Canal
Lake Aldwell storage began 1911
Indian Creek
Little River
mile 7.9
0455
8.6
Glines Canyon Powerhouse
0450
13.5
Lake Mills storage began 1927
ELWHA RIVER
EXPLANATION
0430
6.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
North
0565
29.2
Lake Cushman storage began 1925
Cushman Powerhouse No 1
Fork Skokomish
Cushman Reservoir No 2 completed 1930 mile 17.3
Cushman Powerhouse No 2
To Hood Canal
River
0595
10.1
mile 9.01
0615
5.3
SKOKOMISH RIVER
South Fork Skokomish River
0605
3.2

Figure 8.—Gaging stations in Elwha and Skokomish River basins.

12045000 LAKE MILLS AT GLINES CANYON, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°00'08", long 123°35'55", in SW¼SE¼ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympi National Park, at Glines Canyon Dam on Elwha River, 2 mi upstream from Griff Creek, 4.1 mi south of Elwha, and 11 mi southwest of Port Angeles.

DRAINAGE AREA.--245 mi².

PERIOD OF RECORD.--April 1927 to current year. Prior to October 1950, monthly change in contents only, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Usable capacity, 7,460 acre-ft between gage heights 592.0 ft, normal minimum operation level, and 610.0 ft, top of spillway gates. Storage below gage height 592.0 ft, 31,190 acre-ft. Figures given herein represent total contents. Water is used for power production by Crown Zellerbach Corp.

COOPERATION.--Gage-height record furnished by Crown Zellerbach Corp.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 39,940 acre-ft Dec. 22, 1936, gage height, 613.0 ft; minimum observed since reservoir first filled in May 1927, 24,290 acre-ft Nov. 14, 1929, gage height, 574.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,209 acre-ft Mar. 9, gage height, 611.3 ft; minimum observed, 35,858 acre-ft Apr. 8, gage height, 603.4 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	606.3	37,076	--
Oct. 31	608.9	38,177	+1,101
Nov. 30	608.3	37,919	-258
Dec. 31	609.2	38,306	+387
CAL YR 1982	--	--	-86
Jan. 31	609.0	38,220	-86
Feb. 28	609.9	38,607	+387
Mar. 31	609.1	38,263	-344
Apr. 30	609.2	38,306	+43
May 31	610.4	38,822	+516
June 30	609.6	38,478	-344
July 31	610.3	38,779	+301
Aug. 31	609.6	38,478	-301
Sept. 30	606.0	36,950	-1,528
WTR YR 1983	--	--	-126

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°03'18", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft upstream from site of McDonald Bridge (now removed), 0.7 mi upstream from Little River, 4.9 mi below Glines Canyon Dam, 8 mi southwest of Port Angeles, and at mile 8.6.

DRAINAGE AREA.--269 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to December 1901, October 1918 to current year. Published as "at McDonald" October 1897 to December 1901.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M) 1932, 1933(M). WSP 1566: 1957(M).

GAGE.--Water-stage recorder. Datum of gage is 200.00 ft National Geodetic Vertical Datum of 1929. Oct. 1, 1897, to Dec. 31, 1901, nonrecording gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water-stage recorder under McDonald Bridge at datum 7.4 ft higher.

REMARKS.--Water-discharge records good. Water is diverted through Glines Canyon powerhouse and returned to river above gage. Flow partly regulated by Lake Mills 4.9 mi upstream (see sta 12045000).

AVERAGE DISCHARGE.--69 years (water years 1898-1901, 1919-1983), 1,515 ft³/s, 76.48 in/yr, 1,098,000 acre-ft/yr, adjusted for storage since April 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,600 ft³/s Nov. 18, 1897, gage height, 14.5 ft, from graph based on gage readings, site and datum then in use, from rating curve extended above 3,300 ft³/s on basis of two determinations of flow over dam at discharge 26,700 ft³/s and 30,100 ft³/s, referred to 1897 datum; minimum daily discharge, 10 ft³/s Oct. 3, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,300 ft³/s Dec. 3, gage height, 21.24 ft; minimum, 243 ft³/s Oct. 3, gage height, 9.31 ft; minimum daily, 360 ft³/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	402	1890	1290	937	1570	2180	1540	1050	3550	1690	1490	773
2	360	1330	1200	945	1320	2050	1500	1370	3200	1940	1250	1090
3	390	1210	12200	1440	1380	1860	1250	1270	3020	1800	1230	773
4	384	1620	5720	1450	1320	1800	1330	1280	2490	1520	1220	598
5	378	1780	3300	4760	1240	1480	1970	1330	2550	1640	1090	551
6	579	1840	2740	3090	1190	1310	1140	1260	2430	1900	1050	598
7	937	1520	1880	3030	1210	1560	1100	1330	2670	1590	1050	687
8	492	1680	1930	6380	1210	2240	930	1200	2800	1480	1080	744
9	507	1270	1960	4010	1280	6510	976	1200	3060	1350	1130	638
10	426	1010	1640	5010	1320	4770	765	1240	3550	1260	1060	744
11	519	1040	1470	1750	3380	3750	884	1110	2940	1970	1020	984
12	524	953	1590	2710	7880	2790	831	1150	2240	3700	969	744
13	457	937	1470	2440	5650	2820	688	984	2280	3300	937	645
14	418	831	1660	2250	3570	3730	688	1270	2160	2740	891	591
15	420	961	2410	2070	2880	2520	694	1360	2530	2220	854	539
16	469	1040	6140	2020	2890	2250	723	1290	2420	1950	854	482
17	396	1260	4190	1990	3660	2140	716	1290	2660	1620	854	507
18	408	1180	3460	2270	4040	2010	907	1260	2620	1790	802	631
19	402	1110	3150	2640	3330	1620	984	1300	2120	1800	787	532
20	494	802	2340	2140	4070	1510	1140	1580	2120	1680	758	488
21	680	625	2000	2030	3260	1520	1140	1950	1930	1570	652	469
22	5010	701	2000	1820	3250	1450	1100	2020	1780	1600	722	414
23	2560	584	1680	1750	5510	1440	1110	2270	1830	1510	722	451
24	3960	526	1600	1830	5300	1290	1130	2760	1720	1620	708	372
25	1140	526	1540	1990	3550	1160	1140	3170	1710	1580	715	372
26	4260	659	1320	2520	2990	1190	1140	2890	1570	1410	687	444
27	3130	819	1180	3750	2490	1180	1010	2760	1640	1330	730	444
28	2290	1980	961	2750	2460	1170	976	3260	1930	1480	604	438
29	2240	1880	922	2340	---	1620	953	4370	1970	1350	758	372
30	1750	1180	930	1970	---	1780	918	4760	1700	1300	758	378
31	1580	---	937	1900	---	1610	---	4070	---	1260	701	---
TOTAL	40213	34744	76810	80002	83200	66310	31373	59404	71190	54950	28133	17493
MEAN	1297	1158	2478	2581	2971	2139	1046	1916	2373	1773	908	583
MAX	5010	1980	12200	6380	7880	6510	1970	4760	3550	3700	1490	1090
MIN	360	526	922	937	1190	1160	688	984	1570	1260	604	372
AC-FT	79760	68910	152400	158700	165000	131500	62230	117800	141200	109000	55800	34700
MEAN*	1315	1154	2485	2579	2979	2133	1047	1924	2369	1772	902	556
CFSM*	4.89	4.29	9.24	9.59	11.07	7.93	3.89	7.15	8.81	6.61	3.35	2.07
IN.*	5.64	4.79	10.65	11.06	11.53	9.14	4.34	8.25	9.82	7.62	3.87	2.30
AC-FT*	80660	68650	152800	158610	165400	131200	62300	118300	140900	109300	55500	33050

CAL YR 1982 TOTAL 629567 MEAN 1725 MAX 12200 MIN 360 AC-FT 1249000 MEAN* 1725 CFSM* 6.41 IN.* 87.06 AC-FT* 1249000
WTR YR 1983 TOTAL 643822 MEAN 1764 MAX 12200 MIN 360 AC-FT 1277000 MEAN* 1764 CFSM* 6.56 IN.* 89.01 AC-FT* 1277000

* Adjusted for change in contents in Lake Mills.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962-70, 1972 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1976 to August 1977.

REMARKS.--Prior to 1962 published as Elwha River near Port Angeles. October 1971 to September 1974 published as Elwha River below Little River, near Port Angeles.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)
NOV , 1982												
29...	1115	1910	96	7.8	4.5	1.9	12.0	96	<1	K5	40	0
JAN , 1983												
17...	1130	2740	71	7.9	5.0	36	12.1	97	K4	K2	32	1
MAR												
09...	1230	8100	82	6.7	6.0	7.2	13.1	107	K2	240	38	2
MAY												
19...	0830	1330	87	7.1	8.5	1.0	11.4	97	<1	--	40	13
JUL												
20...	1200	1680	68	8.0	11.0	2.4	11.2	102	K3	22	31	2
SEP												
20...	1330	494	90	8.1	12.5	.70	10.6	98	<1	<1	40	3

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV , 1982											
29...	14	1.2	1.9	9	.1	.20	40	9.0	.90	<.10	5.7
JAN , 1983											
12...	11	1.2	1.7	10	.1	.20	31	6.6	1.0	<.10	5.6
MAR											
09...	13	1.2	1.9	10	.1	.30	36	8.0	.90	<.10	6.4
MAY											
19...	14	1.2	2.3	11	.2	.40	27	8.5	8.8	<.10	5.8
JUL											
20...	11	.80	1.4	9	.1	.20	29	6.4	.60	<.10	4.4
SEP											
20...	14	1.2	2.0	10	.1	.30	37	8.5	.90	<.10	5.1

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV , 1982											
29...	53	57	.07	273	<.10	<.060	.60	.010	.020	<.010	10
JAN , 1983											
12...	48	46	.07	355	<.10	<.060	.80	.060	.020	<.010	--
MAR											
09...	54	53	.07	1150	<.10	<.060	.30	.050	.020	<.010	10
MAY											
19...	59	57	.08	212	<.10	<.060	.20	.010	.010	<.010	10
JUL											
20...	34	42	.05	154	<.10	.040	.30	.020	.017	.020	20
SEP											
20...	52	54	.07	69	<.10	.080	.20	.040	.040	.040	--

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV , 1982											
29...	<1	7	<.5	<1	<1	<3	2	24	<1	11	19
JAN , 1983											
12...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	<1	6	<.5	<1	<1	<3	2	13	<1	4	4
MAY											
19...	1	9	<.5	3	<1	<3	5	13	<1	7	11
JUL											
20...	<1	9	1	<1	<1	<3	1	10	<1	6	6
SEP											
20...	--	--	--	--	--	--	--	--	--	--	--

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982											
29...	<.1	<10	<1	<1	<1	98	<6	6	11	57	--
JAN , 1983											
12...	--	--	--	--	--	--	--	--	37	274	98
MAR											
09...	.3	<10	2	<1	<1	96	<6	<3	41	897	76
MAY											
19...	.1	<10	4	1	<1	100	<6	37	2	7.2	--
JUL											
20...	<.1	<10	3	<1	<1	74	<6	8	7	32	--
SEP											
20...	--	--	--	--	--	--	--	--	1	1.3	--

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW¼NE¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi upstream from Canyon Creek, 4.8 mi southwest of Sequim, and at mile 11.8.

DRAINAGE AREA.--156 mi².

PERIOD OF RECORD.--June 1923 to September 1930, June 1937 to current year. July 1897 to July 1899 at site below Canyon Creek, published as "near Sequim," records not equivalent. Water temperatures July 1968 to December 1969.

REVISED RECORDS.--WSP 1316: 1924-25(M), 1927(M). WSP 1932: 1957, 1958-59(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 569.3 ft National Geodetic Vertical Datum of 1929 (river-profile survey). June 8, 1923, to Sept. 30, 1930, nonrecording gage just above fish-hatchery diversion 0.5 mi downstream at different datum. June 19 to Aug. 12, 1937, nonrecording gage at present site and datum.

REMARKS.--Records good except those for periods of no gage-height record Oct. 25-Dec. 14, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--53 years (water years 1924-30, 1938-83), 393 ft³/s, 34.21 in/yr, 284,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s Nov. 27, 1949, gage height, 8.58 ft, from floodmarks, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 65 ft³/s Jan. 31 to Feb. 3, 1979, during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 22	1700	2,110	5.58	Dec. 16	1000	2,010	5.56
Dec. 3	1600	*3,710	*6.71	May 30	0100	1,970	5.49

Minimum discharge, 104 ft³/s Oct. 20, 21, gage height, 2.68 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	343	189	229	394	528	322	418	1450	717	628	423
2	118	305	177	229	361	500	309	458	1300	751	550	394
3	115	289	1970	229	335	468	293	463	1210	672	506	322
4	113	348	1530	243	318	443	281	458	1050	653	458	297
5	113	352	807	995	301	418	273	484	963	765	438	269
6	148	343	574	793	293	394	273	468	963	779	458	247
7	140	297	448	640	277	384	269	458	1030	640	458	236
8	123	281	393	1120	262	418	266	433	1130	579	511	236
9	127	266	352	821	285	1250	266	403	1120	545	500	229
10	125	251	313	704	277	1130	258	375	1220	545	438	233
11	127	236	297	622	591	879	251	366	1050	779	423	258
12	120	226	322	550	1500	759	243	380	879	1140	403	236
13	113	219	309	495	1220	872	236	428	800	1050	389	222
14	111	205	305	438	850	995	233	500	857	894	408	215
15	111	196	574	398	665	793	233	591	1020	678	394	205
16	113	202	1640	375	585	659	240	517	948	597	357	195
17	130	215	1090	361	678	579	262	511	1150	597	348	186
18	115	205	894	646	717	517	293	511	987	640	343	305
19	108	192	704	678	603	474	335	556	814	634	330	254
20	104	183	550	539	385	438	370	659	731	609	313	215
21	134	171	468	458	522	418	370	814	678	597	301	205
22	1310	159	506	408	603	398	366	843	672	597	293	199
23	825	156	408	380	1320	375	384	932	717	609	297	176
24	956	156	348	443	1200	357	423	1030	678	628	289	174
25	872	151	326	418	925	343	394	1150	640	585	281	168
26	1220	168	305	902	758	335	366	1130	653	556	269	165
27	814	177	277	1210	646	330	348	1130	704	545	266	165
28	597	269	266	814	574	318	352	1260	744	585	277	159
29	528	251	254	628	---	339	366	1690	717	506	322	153
30	432	222	243	517	---	352	384	1850	737	511	384	148
31	370	---	236	443	---	335	---	1680	---	615	335	---
TOTAL	10450	7034	17075	17726	17645	16797	9259	22946	27612	20598	11967	6899
MEAN	337	234	551	572	630	542	309	740	920	664	386	230
MAX	1310	352	1970	1210	1500	1250	423	1850	1450	1140	628	423
MIN	104	151	177	229	262	318	233	366	640	506	266	148
CFSM	2.16	1.50	3.53	3.67	4.04	3.47	1.98	4.74	5.90	4.26	2.47	1.47
IN.	2.49	1.68	4.07	4.23	4.21	4.01	2.21	5.47	6.58	4.91	2.85	1.65
AC-FT	20730	13950	33870	35160	35000	33320	18370	45510	54770	40860	23740	13680

CAL YR 1982 TOTAL 170761 MEAN 468 MAX 1970 MIN 104 CFSM 3.00 IN. 40.72 AC-FT 338700
WTR YR 1983 TOTAL 186008 MEAN 510 MAX 1970 MIN 104 CFSM 3.27 IN. 44.36 AC-FT 368900

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi west of Brinnon, and at mile 4.5.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--August to December 1910 (gage height only), December 1910 to December 1911, June 1936 to current year. Published as "near Duckabush" water years 1910-11. Chemical analyses April 1972 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft National Geodetic Vertical Datum of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records excellent except those for period of no gage-height record Feb. 1 to Mar. 10, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--45 years (water years 1939-83), 422 ft³/s, 86.18 in/yr, 305,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,960 ft³/s Nov. 26, 1949, gage height, 10.06 ft, from rating curve extended above 4,800 ft³/s on basis of slope-area measurement of peak flow; minimum, 45 ft³/s Oct. 26, 28, 29, 1942; minimum gage height, 1.32 ft Sept. 30, 1939, Sept. 14-20, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 22	1300	*7,450	*9.26	Jan. 26	2100	2,730	5.57
Oct. 25	2300	2,970	5.77	Feb. 12	unknown	unknown	unknown
Dec. 3	1700	5,950	8.07	Feb. 23	unknown	unknown	unknown
Dec. 16	0600	3,770	6.39	Mar. 9	unknown	unknown	unknown
Jan. 18	1400	2,980	5.78				

Minimum discharge, 66 ft³/s Oct. 5, 6, gage height, 1.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	502	623	201	425	600	536	431	1020	667	434	333
2	71	416	479	218	380	550	494	439	914	736	374	347
3	70	370	3320	249	340	520	402	428	883	581	338	257
4	69	556	2100	295	310	500	346	419	770	502	309	225
5	67	629	1040	1590	290	480	318	434	714	571	300	201
6	268	602	730	917	290	560	315	424	717	569	304	180
7	230	465	556	891	270	720	315	535	837	474	310	168
8	143	399	451	1600	260	1100	296	454	983	425	332	162
9	151	347	391	963	300	3000	278	384	941	406	321	155
10	135	313	347	1150	340	2180	258	341	1140	404	294	200
11	125	285	313	923	1100	1340	244	335	884	572	278	230
12	112	265	416	742	2700	1130	229	358	729	969	261	182
13	98	246	387	623	1600	1420	215	407	662	1020	257	163
14	91	230	507	512	1300	1440	206	464	700	811	265	154
15	85	218	1070	438	1200	965	202	479	814	585	252	145
16	85	258	2700	399	1400	722	211	427	749	495	233	138
17	103	339	1540	434	2100	582	244	432	879	498	226	134
18	88	328	1100	2140	1400	486	300	427	786	556	220	157
19	81	299	865	1580	1200	427	392	450	652	553	209	153
20	76	265	634	936	1340	387	453	607	581	509	202	137
21	576	239	560	684	1100	758	416	752	532	472	196	128
22	5070	221	597	551	1500	744	384	727	523	455	192	122
23	1660	204	447	502	2900	351	418	861	553	482	191	118
24	1830	196	370	970	1600	330	469	1050	509	491	186	115
25	1540	188	332	1130	1300	305	407	1080	488	453	175	113
26	2220	204	302	2260	950	301	349	953	498	427	168	111
27	1300	416	271	2080	800	311	322	941	562	402	163	110
28	970	1220	249	1150	680	323	321	1130	605	422	188	108
29	997	859	233	803	---	653	350	1470	547	370	310	105
30	719	917	218	613	---	754	387	1490	550	375	597	100
31	581	---	210	498	---	611	---	1200	---	432	355	---
TOTAL	19688	11996	23364	28042	29375	23750	10077	20349	21722	16704	8440	4951
MEAN	635	400	754	905	1049	766	336	656	724	539	272	165
MAX	5070	1220	3320	2260	2900	3000	536	1490	1140	1020	597	347
MIN	67	188	210	201	260	301	202	335	488	370	163	100
CFSM	9.55	6.02	11.3	13.6	15.8	11.5	5.05	9.86	10.9	8.11	4.09	2.48
IN.	11.01	6.71	13.07	15.69	16.43	13.29	5.64	11.38	12.15	9.34	4.72	2.77
AC-FT	39050	23790	46340	55620	58270	47110	19990	40360	43090	33130	16740	9820

CAL YR 1982 TOTAL 180240 MEAN 494 MAX 5070 MIN 67 CFSM 7.43 IN. 100.83 AC-FT 357500
WTR YR 1983 TOTAL 218458 MEAN 599 MAX 5070 MIN 67 CFSM 9.01 IN. 122.21 AC-FT 433300

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi upstream from Lake Cushman, 2.8 mi upstream from Dry Creek, 11.3 mi northwest of Hoodsport, and at mile 29.2.

DRAINAGE AREA.--57.2 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M). WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 30, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--59 years, 509 ft^3/s, 120.84 in/yr, 368,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft^3/s Nov. 5, 1934, gage height, 14.4 ft, from high-water mark, from rating curve extended above 9,800 ft^3/s on basis of slope-area measurement at gage height 12.2 ft; minimum recorded, 16 ft^3/s Sept. 23, 1930, gage height, 1.12 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 22	1230	6,350	7.49	Feb. 12	0700	4,220	6.36
Dec. 3	1030	*10,600	*9.16	Feb. 23	0600	4,720	6.65
Dec. 16	0645	4,360	6.44	Mar. 9	0615	4,920	6.76

Minimum discharge, 56 ft^3/s Oct. 5, 6, gage height, 1.55 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	656	722	285	565	752	683	531	758	710	345	401
2	64	550	625	305	510	710	631	504	704	625	309	423
3	62	500	5850	337	468	662	555	488	674	495	281	278
4	59	812	2030	446	437	635	494	476	620	455	264	232
5	57	973	1090	2020	405	615	467	480	595	473	260	203
6	401	847	822	1010	410	686	468	474	605	459	257	188
7	345	692	671	1440	387	1080	464	628	692	410	260	173
8	218	590	587	1960	361	2040	432	538	770	378	271	167
9	200	510	526	1190	414	3600	405	464	758	357	257	158
10	155	459	480	1570	478	2260	382	424	1080	353	239	297
11	130	414	442	1210	1620	1560	354	426	733	450	225	271
12	112	378	772	910	3600	1390	329	458	605	740	215	206
13	100	349	579	758	2210	1650	312	499	565	1120	215	185
14	92	325	601	645	1410	1650	302	539	590	758	218	170
15	84	313	1150	580	1250	1150	299	516	662	585	206	159
16	100	378	3010	540	1560	896	320	482	605	515	194	150
17	119	482	1650	640	2270	750	366	488	722	500	191	142
18	94	441	1250	2060	1800	659	438	482	685	505	185	185
19	84	428	1010	1540	1280	598	546	518	600	495	179	156
20	79	383	772	996	1490	553	562	652	530	464	173	138
21	777	341	683	777	1200	520	491	715	495	432	167	130
22	4010	313	686	662	2070	511	467	689	491	414	164	126
23	1420	285	570	656	3690	567	506	855	491	419	164	121
24	1710	271	486	1040	2140	511	594	990	459	410	158	118
25	1500	253	460	1220	1460	469	495	951	450	392	150	114
26	2150	301	424	2150	1250	461	443	839	455	365	145	111
27	1360	704	388	2000	988	475	410	838	473	383	142	109
28	1250	1650	357	1100	847	479	416	1020	486	374	264	105
29	1300	1090	337	854	---	767	450	1280	454	333	383	101
30	854	973	317	716	---	964	531	1130	459	337	383	97
31	740	---	301	630	---	791	---	882	---	361	253	---
TOTAL	19686	16661	29648	32247	36570	30411	13612	20256	18266	15067	7117	5414
MEAN	635	555	956	1040	1306	981	454	653	609	486	230	180
MAX	4010	1650	5850	2150	3690	3600	683	1280	1080	1120	383	423
MIN	57	253	301	285	361	461	299	424	450	333	142	97
CFSM	11.1	9.70	16.7	18.2	22.8	17.2	7.94	11.4	10.6	8.50	4.02	3.15
IN.	12.80	10.84	19.28	20.97	23.78	19.78	8.85	13.17	11.88	9.80	4.63	3.52
AC-FT	39050	33050	58810	63960	72540	60320	27000	40180	36230	29890	14120	10740

CAL YR 1982 TOTAL 210176 MEAN 576 MAX 5850 MIN 57 CFSM 10.1 IN. 136.69 AC-FT 415900
WTR YR 1983 TOTAL 244955 MEAN 671 MAX 5850 MIN 57 CFSM 11.7 IN. 159.31 AC-FT 485900

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1965 to September 1982.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
MAR , 1983										
24...	1300	78	7.7	5.5	.50	12.4	K1	<.10	.80	.010
JUN										
23...	1400	68	7.4	7.0	2.0	12.0	<1	<.10	.30	.010
SEP										
15...	1155	85	6.4	10.5	.50	11.0	--	<.10	.40	.030

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'25", long 123°13'20", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, at Cushman Dam No. 1, 4 mi northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi².

PERIOD OF RECORD.--Water years 1974 to current year (discontinued).

REMARKS.--Descriptive location given is for reservoir outlet. Samples are taken near the dam.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
MAR , 1983											
24...	1120	1.00	54	7.4	7.0	3.0	12.0	<1	<.10	.50	.020
24...	1130	100	56	7.4	6.0	3.0	11.7	<1	<.10	.60	.010
24...	1145	200	58	7.4	5.0	3.0	11.2	<1	<.10	.60	.010
JUN											
23...	1205	1.00	58	--	16.0	1.0	9.5	<1	<.10	.20	.010
23...	1210	100	56	--	7.0	2.0	10.8	<1	<.10	<.20	.010
23...	1215	210	58	--	5.5	3.0	9.8	<1	<.10	.20	.020
SEP											
15...	1040	1.00	55	--	18.0	1.0	9.5	--	<.10	.40	.030
15...	1045	100	56	--	9.5	1.0	10.0	<1	<.10	.30	.030
15...	1050	255	56	--	6.0	2.0	8.8	<1	< 10	.50	.020

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA

LOCATION.--Lat 47°23'52", long 123°11'57", in SE¼NW¼ sec.16, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110018, at Cushman Dam No. 2, 2.9 mi west of Hoodsport.

DRAINAGE AREA.--99.2 mi².

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Descriptive location given is for lake outlet. Samples are taken at log boom, approximately 300 ft upstream from dam.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
MAR , 1983											
24...	0940	1.00	56	7.3	6.5	3.0	11.8	<1	<.10	.30	.010
24...	0950	50.0	56	7.3	6.0	3.0	11.9	<1	<.10	.40	.010
24...	1000	110	57	7.4	6.0	4.0	11.9	K1	<.10	.40	.010
JUN											
23...	1050	1.00	59	7.3	10.0	2.0	10.2	<1	<.10	.70	.100
23...	1055	50.0	57	7.2	7.0	3.0	10.4	<1	<.10	.30	.010
23...	1100	125	57	6.8	6.0	2.0	10.7	<1	<.10	.50	.010
SEP											
15...	0920	1.00	57	6.9	10.5	1.0	10.1	--	<.10	.30	.030
15...	0925	50.0	56	5.9	9.0	1.0	10.1	<1	<.10	.50	.030
15...	0930	115	58	6.8	8.5	1.0	9.4	<1	<.10	.30	.030

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12058605 PENSTOCK AT POWERHOUSE NEAR POTLATCH, WA

LOCATION.--Lat 47°22'11", long 123°04'32", in SW¼NW¼ sec.26, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, at Cushman Powerhouse No. 2, 0.7 mi southwest of Potlatch.

PERIOD OF RECORD.--October 1980 to current year (discontinued).

REMARKS.--Samples are taken from penstock which diverts flow from Lower Lake Cushman on North Fork Skokomish River to Cushman Powerhouse No. 2, which discharges directly into Hood Canal.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
MAR , 1983										
24...	1450	57	7.1	8.0	4.0	11.5	<1	<.10	.50	.010
JUN										
23...	0900	66	6.1	12.0	10	7.2	<1	<.10	.40	.010
SEP										
15...	0710	60	6.0	12.5	1.5	10.0	<1	<.10	.50	.020

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE¼NW¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi upstream from South Fork Skokomish River, 5.4 mi southwest of Potlatch, 7.2 mi downstream from city of Tacoma's Cushman Dam No. 2, and at mile 10.1.

DRAINAGE AREA.--117 mi², includes 99 mi² above Cushman Dam No. 2 which is noncontributing except during spillage.

PERIOD OF RECORD.--March 1944 to November 1949 (destroyed by flood of Nov. 27, 1949), March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to Nov. 27, 1949, and Mar. 16 to May 9, 1950, water-stage recorder at site 200 ft downstream at present datum.

REMARKS.--Records good except those for period of no gage-height record Dec. 4-23, which are fair. Entire flow of river normally diverted at Cushman Dam No. 2 to supply powerplant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (station 12057500) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s Nov. 4, 1955, gage height, 10.45 ft; minimum recorded, 1.3 ft³/s Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 1,160 ft³/s Dec. 3, gage height, 4.82 ft; minimum, 7.5 ft³/s Oct. 3, gage height, 2.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	50	244	68	107	139	248	36	21	28	13	18
2	8.0	43	188	84	93	132	244	35	20	24	13	18
3	8.0	38	773	114	87	114	192	33	20	18	13	16
4	8.6	58	500	169	81	103	162	33	18	17	13	15
5	8.0	114	250	631	76	100	143	32	18	16	13	14
6	20	132	190	363	87	107	121	32	18	15	12	13
7	18	107	150	321	79	162	107	36	18	15	12	13
8	15	87	130	438	76	433	97	36	17	18	12	13
9	13	73	110	344	173	749	90	33	18	17	12	13
10	12	61	100	297	213	438	87	32	23	15	12	26
11	12	54	90	227	353	287	76	30	18	16	12	25
12	10	48	95	180	467	231	73	29	18	21	12	18
13	9.7	44	110	151	423	235	68	29	18	46	11	17
14	9.7	41	200	128	297	278	65	30	17	33	11	16
15	9.7	39	450	110	269	235	61	30	17	26	11	15
16	12	110	750	100	269	196	58	28	17	22	11	14
17	13	169	600	100	586	169	56	28	20	20	11	13
18	11	143	650	114	447	147	54	26	23	18	11	18
19	10	128	500	114	301	128	52	25	20	18	11	17
20	10	107	400	103	316	114	50	25	16	18	12	15
21	26	90	300	97	261	103	48	24	17	17	12	15
22	107	79	300	93	325	100	46	24	18	16	11	14
23	48	68	250	124	507	100	48	23	18	15	11	13
24	32	61	209	162	368	90	48	22	18	15	12	13
25	30	54	180	201	265	84	44	22	18	15	12	13
26	50	56	154	287	213	81	44	22	16	15	11	13
27	50	93	117	256	177	79	41	21	15	18	11	13
28	81	231	100	201	154	107	39	21	15	16	16	13
29	151	252	87	162	---	372	38	20	15	15	24	12
30	84	325	79	143	---	381	36	20	15	14	26	12
31	61	---	73	121	---	292	---	21	---	13	18	---
TOTAL	945.7	2955	8329	6003	7070	6286	2536	859	542	592	404	460
MEAN	30.5	98.5	269	194	253	203	84.5	27.7	18.1	19.1	13.0	15.3
MAX	151	325	773	631	586	749	248	36	23	46	26	26
MIN	8.0	38	73	68	76	79	36	20	15	13	11	12
AC-FT	1880	5860	16520	11910	14020	12470	5030	1700	1080	1170	801	912

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CAL YR 1982   TOTAL   33360.9   MEAN   91.4   MAX   773   MIN   7.5   AC-FT   66170
WTR YR 1983   TOTAL   36981.7   MEAN   101    MAX   773   MIN   8.0   AC-FT   73350
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12060500 SOUTH FORK SKOKOMISH RIVER NEAR UNION, WA

LOCATION.--Lat 47°20'26", long 123°16'44", in SW¼NE¼ sec.2, T.21 N., R.5 W., Mason County, Hydrologic Unit 17110017, on right bank 3.0 mi upstream from Vance Creek, 2.3 mi upstream from confluence with North Fork, and 8.5 mi west of Union.

DRAINAGE AREA.--76.3 mi².

PERIOD OF RECORD.---August 1931 to current year.

REVISED RECORDS.--WSP 1216: 1950. WSP 1316: 1934(M), 1938(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 107.35 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for periods of no gage-height record April 17 to May 9, May 28 to July 11, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--52 years, 741 ft³/s, 131.88 in/yr, 536,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s Jan. 22, 1935, Nov. 26, 1949, gage height, 11.0 ft, from rating curve extended above 11,000 ft³/s; minimum, 62 ft³/s Sept. 18, 1938; minimum gage height, 1.06 ft Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1400	*16,500	*7.67	Feb. 12	0800	6,810	5.44
Dec. 16	1000	7,270	5.58	Feb. 17	1700	6,310	5.28
Jan. 5	0900	7,800	5.73	Feb. 23	0500	7,310	5.59
Jan. 8	0300	6,650	5.39	Mar. 9	0600	9,040	6.06

Minimum discharge, 79 ft³/s Oct. 5, 6, gage height, 1.55 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	787	1650	615	864	1050	1490	388	323	360	228	324
2	85	652	1250	682	777	970	1450	370	310	460	222	653
3	88	571	9040	932	711	875	1220	360	300	365	216	416
4	82	876	4250	1280	654	804	1000	350	297	320	207	324
5	82	1450	2400	5180	606	765	867	342	290	300	201	276
6	290	1380	1830	2230	638	895	797	340	288	288	195	248
7	411	1100	1510	3230	645	1840	742	440	285	277	190	228
8	278	922	1310	4970	610	4030	674	570	293	265	186	217
9	236	744	1180	2790	995	6770	622	520	310	255	182	206
10	192	626	1070	3110	1380	3370	596	445	410	245	[illegible]	372
11	163	546	984	2250	3010	2260	545	403	365	740	177	484
12	145	486	1280	1630	5980	1790	505	391	325	603	172	337
13	132	441	1260	1290	3800	2260	471	380	300	1520	167	290
14	124	403	1460	1060	2300	2800	444	386	290	1040	163	264
15	116	386	3050	909	2020	1850	423	406	290	700	161	243
16	123	690	5930	811	2310	1390	414	364	295	557	158	226
17	160	964	3700	832	4460	1130	420	345	325	475	154	213
18	140	846	3400	1880	3370	958	438	333	380	426	153	245
19	127	792	2720	1760	2110	836	445	326	390	388	149	229
20	121	697	2000	1270	2930	746	432	343	355	360	145	207
21	463	597	1790	1000	2000	683	417	373	330	336	144	196
22	4300	519	2020	860	2860	654	410	349	310	311	140	189
23	1620	462	1550	1070	5830	707	420	374	305	296	140	181
24	1230	421	1260	1760	2890	673	446	406	300	283	140	177
25	1130	388	1120	2030	1920	602	424	408	290	276	139	172
26	1980	392	[illegible]	3300	1700	588	408	371	280	263	136	168
27	1640	791	925	2670	1430	670	392	348	268	285	132	165
28	1580	2890	836	1750	1200	833	378	354	263	289	186	160
29	2180	2170	762	1330	---	2720	378	373	260	258	414	156
30	1180	2470	703	1130	---	2760	386	373	260	244	388	152
31	891	---	653	976	---	1970	---	340	---	234	281	---
TOTAL	21371	26459	63933	56587	60000	50249	18054	11871	9287	12519	5843	7718
MEAN	689	882	2062	1825	2143	1621	602	383	310	404	188	257
MAX	4300	2890	9040	5180	5980	6770	1490	570	410	1520	414	653
MIN	82	386	653	615	606	588	378	326	260	234	132	152
CFSM	9.03	11.6	27.0	23.9	28.1	21.2	7.89	5.02	4.06	5.29	2.46	3.37
IN.	10.42	12.90	31.17	27.59	29.25	24.50	8.80	5.79	4.53	6.10	2.85	3.76
AC-FT	42390	52480	126800	112200	119000	99670	35810	23550	18420	24830	11590	15310

CAL YR 1982 TOTAL 295634 MEAN 810 MAX 9040 MIN 79 CFSM 10.6 IN. 144.14 AC-FT 586400
WTR YR 1983 TOTAL 343891 MEAN 942 MAX 9040 MIN [illegible] CFSM 12.3 IN. 167.66 AC-FT 682100

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE¼NW¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi downstream from confluence of North and South Forks, 4.7 mi southwest of Potlatch, and at mile 5.3.

DRAINAGE AREA.--227 mi², includes 99 mi² above Cushman Dam No. 2 which is normally noncontributing.

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WDR WA-72: 1968(M), 1971(M). WDR WA-75: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft National Geodetic Vertical Datum of 1929. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mi upstream at datum 16.47 ft National Geodetic Vertical Datum of 1929 used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--Water-discharge records excellent except those for flows above 15,000 ft³/s, which are poor. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years, practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s Nov. 3, 1955, gage height, 12.6 ft, site and datum then in use; minimum, 125 ft³/s Sept. 14-17, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft National Geodetic Vertical Datum of 1929 at site on left bank 150 ft above old highway bridge, discharge, 18,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,800 ft³/s Dec. 3, gage height, 16.35 ft; minimum, 166 ft³/s Oct. 1, 2, 4-6, gage height, 8.45 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	170	1070	2680	850	1320	1740	2600	634	516	558	373	403
2	170	904	1980	919	1200	1620	2550	602	492	743	368	638
3	170	801	11200	1220	1110	1470	2050	583	481	602	364	540
4	169	1080	8070	1680	1030	1360	1630	564	469	534	359	452
5	166	1850	3380	8630	961	1300	1400	552	458	492	349	409
6	274	2010	2260	4280	999	1430	1270	546	447	469	344	383
7	492	1550	1710	5180	1010	2590	1170	695	447	452	340	364
8	383	1310	1420	8590	966	5660	1070	815	452	447	335	354
9	338	1080	1230	5040	1560	10600	985	715	458	430	330	344
10	294	920	1100	5510	2190	6190	945	654	648	414	326	452
11	263	809	993	3840	4500	4020	883	641	583	403	326	615
12	237	730	1240	2670	8140	3110	830	621	510	688	326	498
13	222	670	1240	2060	6730	3510	786	608	469	1800	321	436
14	208	620	1490	1710	4010	4440	750	608	452	1380	317	403
15	199	592	4120	1480	3510	3180	722	634	464	914	312	383
16	207	1000	9390	1330	3790	2290	701	596	458	736	312	368
17	239	1460	6090	1300	7020	1780	695	577	492	641	307	354
18	236	1300	5920	2230	6010	1500	701	558	596	583	307	373
19	223	1190	4640	2320	3560	1320	722	552	621	540	303	373
20	217	1060	3140	1810	4620	1200	722	552	564	510	303	349
21	336	929	2630	1500	3360	1090	681	577	522	461	299	340
22	4740	822	3050	1330	4500	1040	654	556	492	458	299	330
23	2160	742	2270	1610	8310	1070	661	570	481	436	294	326
24	1340	680	1780	2360	5030	1030	729	589	469	425	294	321
25	1240	630	1540	2860	3260	953	695	596	469	414	294	317
26	2090	621	1410	4520	2790	922	667	558	447	409	294	312
27	2000	954	1250	3920	2350	994	648	540	430	425	290	307
28	1800	3670	1130	2610	1970	1190	621	546	425	436	307	307
29	3120	3240	1040	1970	---	4380	608	583	414	403	469	303
30	1620	3880	962	1670	---	4830	608	589	414	393	510	299
31	1200	---	900	1470	---	3590	---	546	---	383	419	---
TOTAL	26523	38174	91255	88469	95806	81399	29754	18559	14640	17999	10391	11703
MEAN	856	1272	2944	2854	3422	2626	992	599	488	581	335	390
MAX	4740	3880	11200	8530	8310	10600	2600	815	648	1800	510	688
MIN	166	592	900	850	961	922	608	540	414	383	290	299
AC-FT	52610	75720	181000	175500	190000	161500	59020	36810	29040	35700	20610	23210

CAL YR 1982	TOTAL	455073	MEAN	1247	MAX	12200	MIN	159	AC-FT	902600
WTR YR 1983	TOTAL	524672	MEAN	1437	MAX	11200	MIN	166	AC-FT	1041000

12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.—Lat 47°38'27", long 122°47'02", in NW¼SE¼ sec. 22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi upstream from county road bridge across Big Beef Harbor, and 1.9 mi east of Seabeck.

DRAINAGE AREA.—13.8 mi².

PERIOD OF RECORD.—August 1969 to October 1981, June to October 1983 (seasonal record).

REVISED RECORDS.—WDR WA-76-1: 1975(M).

GAGE.—Water-stage recorder. Elevation of gage is 40 ft, from topographic map. Prior to July 7, 1978, at site 110 ft downstream at datum 2.03 ft lower.

REMARKS.—Records good except those below 4.0 ft³/s, which are fair. Flow regulated by Lake Symington, 4.6 mi upstream. No diversions upstream from station.

AVERAGE DISCHARGE.—12 years (water years 1970-81), 37.9 ft³/s, 37.30 in/yr, 27,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 757 ft³/s Dec. 7, 1970, gage height, 4.92 ft; maximum gage height, 5.74 ft Jan. 16, 1974, site and datum then in use; minimum, 2.3 ft³/s Aug. 30, 31, 1970, Sept. 2, 1974, but may have been less during period of no gage-height record Sept. 3-30, 1974.

EXTREMES FOR CURRENT PERIOD.—Maximum discharge during period June 23 to October 1983, 20 ft³/s July 8, gage height, 1.93 ft; minimum discharge during period June 23 to October 1983, 3.0 ft³/s Aug. 27, gage height, 1.57 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JUNE TO OCTOBER 1983
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	---	8.2	4.1	7.2	4.8
2	---	7.9	4.0	7.4	5.0
3	---	7.6	3.8	7.0	5.1
4	---	7.4	3.8	6.5	5.1
5	---	7.3	3.7	6.1	5.1
6	---	7.4	3.7	5.8	4.9
7	---	7.3	3.7	5.6	4.4
8	---	10	3.7	5.4	4.4
9	---	7.7	3.8	5.3	4.4
10	---	7.4	3.8	6.2	5.1
11	---	8.0	4.4	6.2	5.0
12	---	7.6	4.1	6.1	4.4
13	---	7.6	3.7	5.8	4.4
14	---	7.3	3.7	5.8	4.4
15	---	7.4	3.7	5.6	4.4
16	---	7.4	3.7	5.1	4.4
17	---	7.3	3.7	5.1	4.7
18	---	7.3	3.6	8.0	4.4
19	---	7.3	3.7	6.7	4.4
20	---	4.9	3.6	6.3	5.0
21	---	4.7	3.5	5.8	5.7
22	---	4.4	3.4	5.8	8.1
23	7.3	4.4	3.6	5.8	7.8
24	7.4	4.4	3.7	5.8	8.3
25	7.4	5.1	3.5	5.5	7.7
26	7.6	4.7	3.4	5.1	7.3
27	7.6	4.4	3.4	5.5	7.2
28	8.0	4.2	4.3	5.1	6.5
29	7.6	4.0	5.3	5.1	6.1
30	7.4	3.8	6.7	4.8	7.4
31	---	3.9	6.5	---	7.6
TOTAL	---	198.3	123.3	177.5	173.5
MEAN	---	6.40	3.98	5.92	5.60
MAX	---	10	6.7	8.0	8.3
MIN	---	3.8	3.4	4.8	4.4
CFSM	---	.46	.29	.43	.41
IN.	---	.53	.33	.48	.47
AC-FT	---	393	245	352	344

12073500 HUGE CREEK NEAR WAUNA, WA

LOCATION.--Lat 47°23'22", long 122°41'52", at north line sec.20, T.22 N., R.1 E., Pierce County, Hydrologic Unit 17110019, on right bank 25 ft upstream from bridge, 0.1 mi upstream from mouth, and 2.5 mi west of Wauna.

DRAINAGE AREA.--6.47 mi².

PERIOD OF RECORD.--July 1947 to September 1969, October 1977 to current year.

REVISED RECORDS.--WSP 1636: 1953-54, 1956, 1957(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft, from topographic map. Prior to Sept. 27, 1978, at site 50 ft downstream and prior to June 26, 1951, at datum 0.86 ft higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--28 years (water years 1948-69, 1978-83), 11.5 ft³/s, 24.14 in/yr, 8,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 391 ft³/s, Feb. 9, 1951, gage height, 4.50 ft present datum; minimum, 2.6 ft³/s Aug. 26, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0115	*155	*3.30	Jan. 10	0500	90	2.76
Dec. 16	0800	84	2.69	Feb. 17	1500	81	2.66
Jan. 5	1100	150	3.27	Mar. 9	0830	95	2.81

Minimum discharge, 4.5 ft³/s Oct. 12-14, 18-20, gage height, 1.05 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	5.6	8.6	11	17	23	27	9.3	7.3	7.3	5.5	7.3
2	5.0	5.4	8.5	13	15	23	29	9.1	7.1	6.9	5.3	7.7
3	4.8	5.4	70	17	14	22	23	9.1	6.9	6.3	5.3	6.5
4	4.8	7.3	96	32	13	20	20	9.1	6.9	6.1	5.1	6.5
5	4.8	8.9	35	122	12	19	18	9.1	6.9	5.9	5.1	5.9
6	6.0	7.4	33	74	14	22	17	9.1	6.7	5.9	5.3	5.1
7	5.3	6.3	24	54	13	28	16	10	6.7	5.9	5.3	5.3
8	5.1	5.8	18	57	13	49	15	10	6.7	6.7	5.0	5.3
9	5.0	5.5	15	53	32	81	14	10	6.7	6.7	5.0	5.3
10	4.8	5.3	13	78	35	60	15	10	8.1	6.1	5.1	7.3
11	4.8	5.3	11	46	41	41	14	9.1	7.7	6.1	5.5	6.7
12	4.6	5.2	16	33	51	34	13	8.8	7.5	6.9	5.3	5.9
13	4.6	5.2	16	27	53	35	12	8.4	6.9	8.6	5.1	5.7
14	4.6	5.1	20	22	40	47	12	8.8	6.7	6.5	5.1	5.7
15	4.7	5.1	36	19	35	40	12	9.6	6.7	6.1	5.0	5.7
16	4.7	9.0	71	18	35	30	12	8.6	6.7	5.9	5.0	5.7
17	4.7	16	56	17	61	25	12	8.4	7.5	5.7	5.0	5.5
18	4.6	9.3	61	18	62	22	11	8.4	7.3	5.7	5.1	6.9
19	4.6	9.4	50	19	43	20	11	7.9	7.3	5.7	5.1	6.1
20	4.6	7.8	51	17	44	16	11	7.7	7.3	5.7	5.3	5.7
21	5.9	6.9	46	15	36	17	11	7.7	6.7	5.5	5.3	5.5
22	9.1	6.4	50	15	39	17	11	7.5	6.7	5.3	5.3	5.5
23	6.2	6.1	35	19	56	16	11	7.5	7.1	5.5	5.5	5.5
24	5.5	5.9	26	21	53	15	11	7.3	6.7	5.5	5.5	5.5
25	5.4	5.7	22	20	40	14	10	7.3	6.7	8.1	5.5	5.3
26	6.4	6.0	19	27	33	14	10	7.3	6.3	7.3	5.5	5.3
27	5.6	7.1	17	40	28	14	9.8	7.1	6.3	6.9	5.3	5.3
28	10	8.7	15	35	24	17	9.6	7.1	6.3	6.3	6.7	5.3
29	11	8.4	13	27	---	26	9.3	6.9	6.3	5.7	6.9	5.3
30	6.5	9.5	12	22	---	35	9.3	6.9	6.5	5.5	8.1	5.3
31	5.9	---	11	19	---	28	---	7.3	---	5.5	6.5	---
TOTAL	174.4	211.0	975.1	1007	952	872	416.0	260.4	207.2	193.8	169.6	175.6
MEAN	5.63	7.03	31.5	32.5	34.0	28.1	13.9	8.40	6.91	6.25	5.47	5.85
MAX	11	16	96	122	62	81	29	10	8.1	8.6	8.1	7.7
MIN	4.6	5.1	8.5	11	12	14	9.3	6.9	6.3	5.3	5.0	5.1
CFSM	.87	1.09	4.87	5.02	5.26	4.34	2.15	1.30	1.07	.97	.85	.90
IN.	1.00	1.21	5.61	5.79	5.47	5.01	2.39	1.50	1.19	1.11	.98	1.01
AC-FT	346	419	1930	2000	1890	1730	825	517	411	384	336	348

CAL YR 1982 TOTAL 4736.1 MEAN 13.0 MAX 100 MIN 4.3 CFSM 2.01 IN. 27.23 AC-FT 9390
WTR YR 1983 TOTAL 5614.1 MEAN 15.4 MAX 122 MIN 4.6 CFSM 2.38 IN. 32.28 AC-FT 11140

12079000 DESCHUTES RIVER NEAR RAINIER, WA

LOCATION.--Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, Hydrologic Unit 17110016, on right bank 75 ft upstream from county road crossing, 0.4 mi downstream from outlet of Reichel Lake, 2.7 mi southeast of Rainier, and at mile 25.9.

DRAINAGE AREA.--89.8 mi².

PERIOD OF RECORD.--June 1949 to September 1975, water years 1976-79 (annual maximum), June 1980 to July 1982, water year 1983 (July to October seasonal record).

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348.77 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Probably some small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--27 years (water years 1950-75, 1981), 269 ft³/s, 40.68 in/yr, 194,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,780 ft³/s Jan. 15, 1974, gage height, 15.68 ft, from high-water mark in well, from rating curve extended above 3,900 ft³/s; minimum, 16 ft³/s Sept. 7, 1963, gage height, 1.61 ft.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge during period July to October 1983, 280 ft³/s July 14, gage height, 4.20 ft; minimum discharge during period July to October 1983, 40 ft³/s Oct. 11-17, 19, gage height, 1.17 ft.

REVISIONS.--The annual maximum discharge for the 1978 water year has been revised to 4,080 ft³/s Dec. 2, 1977, gage height, 11.21 ft, superseding figure published in the report for 1978.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JULY TO OCTOBER 1983
MEAN VALUES

DAY	JUL	AUG	SEP	OCT
1	---	66	105	47
2	---	64	114	46
3	---	62	90	45
4	---	61	76	45
5	---	57	67	44
6	---	56	61	44
7	---	56	57	44
8	82	54	56	43
9	80	53	56	43
10	74	51	54	42
11	69	53	76	41
12	74	53	74	41
13	142	51	66	41
14	247	50	61	41
15	190	48	57	41
16	160	47	54	40
17	138	47	53	42
18	131	45	61	42
19	114	45	122	42
20	125	45	84	46
21	118	44	74	44
22	105	44	69	70
23	96	43	66	79
24	90	43	62	60
25	88	43	59	53
26	94	42	57	49
27	86	42	56	46
28	86	43	52	45
29	82	48	52	44
30	76	142	50	46
31	71	98	---	74
TOTAL	---	1696	2041	1470
MEAN	---	54.7	68.0	47.4
MAX	---	142	122	79
MIN	---	42	50	40
CFSM	---	.61	.76	.53
IN.	---	.70	.85	.61
AC-FT	---	3360	4050	2920

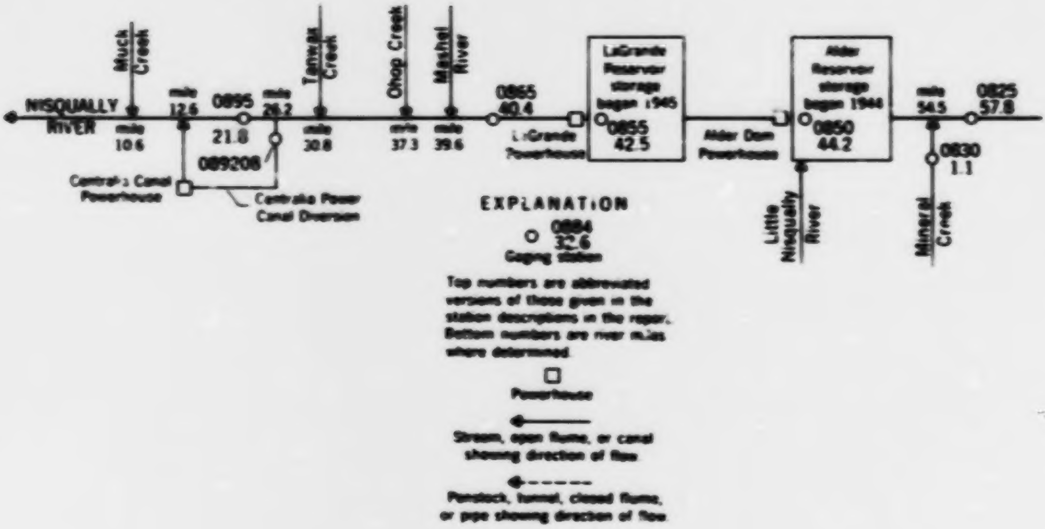
NISQUALLY RIVER
Muck Creek
mile 10.6
mile 12.6
0895
21.8
mile 26.2
089208
Centralia Canal Powerhouse
Centralia Power Canal Diversion
Tanwax Creek
mile 30.8
Ohop Creek
mile 37.3
Mashel River
mile 39.6
0865
40.4
LaGrande Powerhouse
LaGrande Reservoir storage began 1945
0855
42.5
Alder Dam Powerhouse
Alder Reservoir storage began 1944
0850
44.2
Little Nisqually River
mile 54.5
0830
1.1
Mineral Creek
0825
57.8
EXPLANATION
0884
32.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 9.—Gaging stations in Nisqually River basin.

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW¼SW¼ sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft downstream from old railroad bridge, 1.2 mi west of National, 3.3 mi upstream from Mineral Creek, and at mile 57.8.

DRAINAGE AREA.--133 mi^2.

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WDR WA-74-1: 1968(P), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,450 ft, from river-profile map.

REMARKS.--Records excellent. Small diversions for domestic use. Slight regulation at low flow by powerplant at Mount Rainier National Park on Paradise River. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--41 years, 781 ft^3/s, 79.74 in/yr, 565,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft^3/s Dec. 2, 1977, gage height, 11.96 ft, from rating curve extended above 8,000 ft^3/s on basis of slope-area measurement at gage height 11.25 ft; minimum, 108 ft^3/s Dec. 1, 3, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2300	*8,000	*9.32	Jan. 8	0515	5,000	7.95
Jan. 5	1400	4,290	7.57	July 13	1415	3,110	6.87

Minimum discharge, 212 ft^3/s Oct. 5, gage height, 3.44 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	620	619	361	550	735	882	616	1080	728	934	735
2	318	524	609	375	505	688	819	634	998	826	798	688
3	278	470	3710	402	470	652	735	616	903	707	682	532
4	243	521	4460	791	445	628	658	592	798	688	622	475
5	222	607	1990	2940	415	628	610	694	721	756	628	425
6	278	717	1400	2890	425	652	580	700	742	763	646	411
7	346	633	1050	3590	425	749	568	700	854	676	770	397
8	369	552	861	4070	388	934	532	676	966	610	826	352
9	465	491	749	2410	415	1790	515	658	950	574	791	322
10	419	439	658	1880	425	2160	495	610	1090	538	805	562
11	391	420	586	1570	526	1690	475	568	875	580	742	840
12	377	405	568	1300	604	1350	440	550	791	974	604	592
13	372	390	593	1120	735	1210	415	544	694	2360	610	526
14	376	375	574	958	700	1090	397	598	749	2070	646	515
15	372	360	784	854	664	934	388	728	861	1470	664	460
16	329	375	1780	791	700	826	397	682	756	1150	622	450
17	347	854	1540	749	982	742	430	646	847	1020	598	384
18	293	898	1210	770	1150	670	490	670	942	926	604	388
19	269	807	1010	833	974	616	556	694	1030	903	592	343
20	258	702	910	763	982	574	646	749	982	868	532	306
21	340	604	861	694	882	544	700	910	854	784	520	310
22	786	522	784	652	950	532	688	934	798	791	544	322
23	591	471	676	698	1330	510	676	1060	840	896	544	361
24	459	432	598	646	1580	485	749	1180	775	890	532	393
25	409	403	550	616	1320	500	640	1250	688	816	510	402
26	538	384	520	676	1120	470	568	1230	756	756	480	443
27	542	428	470	966	934	465	515	1160	777	714	465	402
28	603	547	440	861	812	460	500	1330	749	742	455	322
29	1050	673	415	756	---	910	520	1670	735	670	515	302
30	788	633	395	670	---	1170	562	1630	735	714	707	290
31	654	---	375	604	---	1050	---	1300	---	918	550	---
TOTAL	13325	16357	31750	37216	21408	26414	17146	26579	25331	27878	19538	13250
MEAN	430	545	1024	1201	765	852	572	857	844	899	630	442
MAX	1050	898	4460	4070	1580	2160	882	1670	1090	2360	934	840
MIN	222	360	375	361	388	460	388	544	688	538	455	290
CFSM	3.23	4.10	7.70	9.03	5.75	6.41	4.30	6.44	6.35	6.76	4.74	3.32
IN.	3.73	4.58	8.88	10.41	5.99	7.39	4.80	7.43	7.09	7.80	5.46	3.71
AC-FT	26430	32440	62980	73820	42460	52390	34010	52720	50240	55300	38750	26280

CAL YR 1982 TOTAL 302208 MEAN 828 MAX 5960 MIN 222 CFSM 6.23 IN. 84.53 AC-FT 599400
WTR YR 1983 TOTAL 276192 MEAN 757 MAX 4460 MIN 222 CFSM 5.69 IN. 77.25 AC-FT 547800

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'15", long 122°08'33", in NE1/4SW1/4 sec.35, T.15 N., R.3 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.5 mi downstream from railroad bridge, 2.5 mi northeast of Mineral, and at mile 1.1.

DRAINAGE AREA.--75.2 mi^2.

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1972: Drainage area. WRD WA-74: 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,340 ft, from topographic map.

REMARKS.--Records excellent except those above 1,500 ft^3/s, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--41 years, 377 ft^3/s, 68.08 in/yr, 273,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,780 ft^3/s Jan. 20, 1972, gage height, 10.87 ft; minimum, 16 ft^3/s Aug. 30, 31, 1970; minimum gage height, 1.40 ft Sept. 22, 23, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2200	*5,800	*9.96	Jan. 8	0430	3,890	8.75
Jan. 5	1330	4,690	9.29				

Minimum discharge, 28 ft^3/s, gage height, 3.11 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	256	521	162	312	440	792	204	114	168	95	89
2	31	204	492	192	280	404	714	180	110	214	91	96
3	36	173	2830	264	258	364	585	175	103	184	88	76
4	33	223	3240	1070	243	340	500	162	96	161	84	69
5	30	394	1440	3570	225	336	444	180	91	148	80	63
6	51	580	960	2850	234	364	412	180	88	140	77	60
7	118	456	678	3320	240	428	384	201	84	136	75	58
8	102	351	540	3260	216	768	352	213	81	133	73	56
9	80	277	448	2090	273	1490	333	213	78	125	74	68
10	65	230	384	2140	329	1540	322	225	167	110	71	96
11	56	196	333	1610	436	1110	305	201	180	103	80	204
12	50	174	344	1070	505	804	291	189	182	118	83	128
13	46	159	349	756	650	672	273	183	137	520	71	103
14	43	143	372	595	610	595	255	140	113	545	66	90
15	41	133	684	510	540	510	243	283	115	412	63	82
16	40	194	1520	452	600	448	240	257	106	335	60	76
17	66	910	1210	416	1050	400	237	233	116	286	58	72
18	75	801	936	404	1200	360	243	237	188	249	57	103
19	60	679	768	424	846	326	243	218	289	223	56	116
20	53	555	684	388	948	301	246	207	287	211	54	89
21	58	439	660	352	816	277	249	208	237	182	53	79
22	198	355	610	336	780	264	237	203	210	163	51	73
23	178	295	485	392	954	249	228	186	223	149	51	69
24	130	257	400	392	1020	234	246	177	206	140	52	68
25	108	225	348	372	816	237	216	165	183	140	51	65
26	167	206	312	388	702	225	204	150	178	142	49	62
27	279	229	267	560	580	229	185	137	163	131	49	62
28	328	548	237	515	500	237	175	130	156	138	51	61
29	884	593	213	444	---	1120	172	124	151	116	61	58
30	443	558	192	396	---	1610	183	120	158	107	97	57
31	302	---	175	348	---	1180	---	116	---	103	72	---
TOTAL	4200	10792	22631	30038	16163	17848	9510	5840	4590	6031	2093	2448
MEAN	135	360	730	969	577	576	317	188	153	195	67.5	81.6
MAX	884	910	3240	3570	1200	1610	792	283	289	545	97	204
MIN	29	133	175	162	216	225	172	116	78	103	49	56
CFSM	1.80	4.79	9.71	12.9	7.67	7.66	4.22	2.50	2.03	2.59	.90	1.09
IN.	2.08	5.34	11.20	14.86	8.00	8.83	4.70	2.89	2.27	2.98	1.04	1.21
AC-FT	8330	21410	44890	59580	32060	35400	18860	11580	9100	11960	4150	4860

CAL YR 1982 TOTAL 150938 MEAN 414 MAX 4330 MIN 23 CFSM 5.51 IN. 74.67 AC-FT 299400
WTR YR 1983 TOTAL 132184 MEAN 362 MAX 3570 MIN 29 CFSM 4.81 IN. 65.39 AC-FT 262200

12083400 NISQUALLY RIVER AT ELBE, WA

LOCATION.--Lat 46°45'47", long 122°11'27", in NW¼NW¼ sec.28, T.15 N., R.5 E., Pierce County, Hydrologic Unit 17110015, at State Highway 7 crossing at Elbe, and at mile 51.7.

DRAINAGE AREA.--226 mi².

PERIOD OF RECORD.--Water years 1973 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging stations; discharge values are fair.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
DEC , 1982											
15...	0930	56	--	4.5	4.0	12.1	K14	.20	.60	.80	.020
MAR , 1983											
23...	0910	60	7.3	6.0	1.0	11.9	<1	<.10	.50	--	.020
JUN											
22...	0955	53	6.7	10.0	4.0	10.7	K15	<.10	.40	--	.040
SEP											
14...	0830	50	--	10.0	80	10.5	K4	<.10	.40	--	.090

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE¼NW¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi west of Alder, 1.7 mi upstream from La Grande Dam, 4.6 mi upstream from Mashel River, and at mile 44.2.

DRAINAGE AREA.--286 mi².

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Usable capacity, 179,600 acre-ft between gage heights 1,114 ft, lower limit of operating range, and 1,207 ft, top of spillway gates. Unused storage below gage height 1,114 ft, 52,110 acre-ft. Crest of spillway is at gage height 1,177 ft. Figures given here represent total contents. Water is used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft Dec. 4, 1975, gage height, 1,207.68 ft; minimum since reservoir first filled, 86,710 acre-ft Mar. 26, 1969, gage height, 1,142.77 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 230,314 acre-ft July 17, 18, gage height, 1,206.54 ft; minimum, 156,154 acre-ft Oct. 21, gage height, 1,179.10 ft.

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project surveys and maps by city of Tacoma in 1944)

1,144	88,510	1,170	135,800	1,200	210,840
1,150	97,910	1,180	158,260	1,207.7	233,910
1,160	115,960	1,190	183,270		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	175661	163941	181791	184111	194722	215770	201173	192911	204421	216553	229322	218530
2	174535	164063	181102	182352	193175	214233	201579	192805	204856	217270	229415	218710
3	173306	163843	195472	180796	191960	212609	201347	192620	205001	217510	229260	218440
4	172081	164014	209332	182734	190671	211333	200506	192356	205001	217660	228826	218020
5	170627	165068	210173	198389	189105	210521	199288	192356	204740	217990	228430	217510
6	169763	167185	209564	209245	187884	209999	198215	192383	204537	218290	228040	216850
7	169027	168443	209825	216437	186620	210405	197345	192568	204421	218320	227890	216234
8	168417	169154	209071	218830	185437	212145	196446	192832	204450	218290	227860	215364
9	167760	169408	207620	214552	184978	216970	195955	193069	204537	218020	227740	214581
10	166805	169408	205874	211130	185539	218260	195472	193201	205554	217720	227680	214204
11	165935	169154	203754	208433	186852	214059	194936	193175	206078	217300	227650	214958
12	165117	168620	201782	207504	189157	208114	194695	193069	206281	217510	227230	214958
13	164137	167835	200071	207009	192304	201550	194534	192752	206223	221860	226900	214407
14	163181	166885	198447	206310	194615	197519	194374	192673	206194	226300	226510	213740
15	162146	165910	200187	205408	196250	197200	193972	193201	206572	229012	226330	213276
16	161186	165435	206805	204102	198766	196852	193677	193518	206718	230004	225760	212377
17	160328	169509	207474	202507	203000	196417	193412	193597	207038	230314	224890	211333
18	159247	172948	206136	201144	207329	195740	193307	193784	207649	230066	224290	210666
19	158143	175328	203435	200332	209390	194829	193254	193972	209071	229508	223720	209593
20	157043	177012	202072	199839	211130	193571	193360	194159	210550	228857	223150	208317
21	156224	177803	202449	199056	212116	192541	193571	194561	211449	227860	222520	206892
22	157137	178032	202420	198070	212899	192119	193838	195017	212116	227440	222160	205554
23	157418	177956	201579	197461	215132	191459	193918	195740	213107	227770	221740	204363
24	157160	177726	199984	196910	217450	190801	194213	196910	214059	228160	221290	203435
25	156552	176706	197983	196062	218380	190436	194240	197983	214668	228610	220720	202333
26	156645	175839	196089	195714	218500	190070	194213	198679	215190	228795	219940	201463
27	156552	175533	194025	196852	217690	189705	193838	199375	215596	228857	219340	200335
28	157371	177344	192356	197461	216970	189835	193465	200216	215912	228950	218710	199404
29	161114	179491	190436	197258	---	194240	193148	201782	216089	228919	218410	198186
30	162866	181077	188400	196707	---	198534	192964	203116	216234	228764	218560	196910
31	163549	---	186362	195767	---	200419	---	204015	---	229012	218380	---
TOTAL	5067113	5140670	6202070	6208482	5608021	6248255	5864255	6048395	6264310	6951491	6962663	6311143
MEAN	163500	171400	200100	200300	200300	201600	195500	195100	208800	224200	224600	210400
MAX	175661	181077	210173	218830	218500	218260	201579	204015	216234	230314	229415	218710
MIN	156224	163843	181102	180796	184978	189705	192964	192356	204421	216553	218380	196910
†	1182.22	1189.14	1191.21	1194.79	1202.11	1196.41	1193.74	1197.65	1201.86	1206.12	1202.58	1195.20
‡	-13387	+17528	+5285	+9405	+21203	-16551	-7455	+11051	+12219	+12778	-10632	-21470

CAL YR 1982......................‡ -14405
WTR YR 1983......................‡ +19974

† Gage height, in feet, at end of month.
‡ Change of contents, in acre-feet.

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year (discontinued).

REMARKS.--Descriptive location given is for reservoir outlet. Samples are taken near the dam.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
DEC , 1982												
15...	1010	1.00	46	--	6.5	7.0	10.4	K2	<.10	.30	--	.020
15...	1025	100	49	--	6.5	8.0	9.3	K3	.10	.30	.40	030
15...	1035	225	47	--	5.5	25	11.0	K9	.20	.40	.60	.050
MAR , 1983												
23...	1015	1.00	46	7.4	8.0	3.0	12.0	<1	<.10	.50	--	.010
23...	1030	100	48	7.4	6.5	3.0	11.4	<1	.10	.40	.50	.010
23...	1045	215	44	6.9	6.0	2.0	11.5	<1	<.10	.20	--	.010
JUN												
22...	1055	1.00	51	6.7	17.0	1.0	9.6	<1	<.10	.50	--	.020
22...	1100	100	55	7.0	11.0	2.0	8.5	<1	<.10	.40	--	.020
22...	1105	260	58	7.1	9.0	3.0	8.4	K1	<.10	.30	--	.030

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'23", long 122°18'13", in SW¼SE¼ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 17110015, at left end of gate control structure, 1.1 mi southeast of La Grande, 1.7 mi downstream from Alder Dam, and at mile 42.5.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft below National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by city of Tacoma from temporary gages in pool above dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Usable storage, 1,053 acre-ft between gage heights 910 ft, minimum practical head, and 935 ft, normal reservoir level. Dead storage below gage height 910 ft, 1,629 acre-ft. Figures given herein represent total contents. Water used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft May 14, 1950, gage height, 936.4 ft; minimum observed since reservoir first filled, 1,370 acre-ft Aug. 24, 1956, gage height, 900.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,656 acre-ft June 18, gage height, 934.52 ft; minimum, 1,980 acre-ft Oct. 2-7, gage height, 920.29 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	930.29	2,452	—
Oct. 31	928.93	2,364	-68
Nov. 30	930.83	2,459	+95
Dec. 31	930.69	2,452	-7
CAL YR 1982	—	—	+26
Jan. 31	931.19	2,478	+26
Feb. 28	930.21	2,428	-50
Mar. 31	930.07	2,421	-7
Apr. 30	930.01	2,418	-3
May 31	930.49	2,442	+24
June 30	930.34	2,434	-8
July 31	929.98	2,416	-18
Aug. 31	930.35	2,435	+19
Sept. 30	930.17	2,426	-9
WTR YR 1983	—	—	-26

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW¼SE¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi downstream from city of Tacoma powerplant, 0.6 mi northwest of La Grande, 0.8 mi upstream from Mashel River, and at mile 40.4.

DRAINAGE AREA.--292 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" September 1906 to October 1911, and as "near La Grande" November to December 1911 and October 1919 to September 1931.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD WA-74: 1956(M), 1959-61(M), 1965.

GAGE.--Water-stage recorder. Altitude of gage is 490 ft, from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--Water-discharge records good. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta. 12085000) since November 1944, and by La Grande Reservoir (see sta 12085500) since February 1945. All diversions returned to river above gage. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--57 years (water years 1907-11, 1920-31, 1944-83), 1,440 ft^3/s, 66.97 in/yr, 1,043,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft^3/s Dec. 4, 1975, gage height, 11.90 ft; practically no flow on many occasions at site "near La Grande" (which excluded diversion) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,200 ft^3/s Jan. 8, gage height, 7.96 ft; minimum, 390 ft^3/s Sept. 8, gage height, 2.85 ft; minimum daily, 778 ft^3/s June 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	932	932	1550	1890	1770	2300	2160	1070	1150	955	1040	864
2	932	941	2010	1890	1780	2300	2160	1070	1060	959	1040	895
3	932	941	2280	1900	1660	2300	2160	1070	1070	958	1040	892
4	932	941	3870	1910	1620	1990	2160	1070	1070	954	1040	890
5	923	932	4610	2180	1630	1780	2160	1070	1070	954	1040	889
6	932	941	3750	2480	1630	1780	1910	1070	1070	956	1040	890
7	932	941	2300	5520	1550	1630	1790	1070	1100	984	1040	889
8	932	932	2300	9560	1470	1960	1650	1070	1110	985	1040	893
9	932	932	2280	9180	1310	2470	1500	1070	1100	986	1040	895
10	932	941	2280	8130	1030	4870	1480	1070	1110	1030	1020	891
11	932	932	2280	6150	914	6570	1390	1070	1110	1020	1010	890
12	923	1000	2280	3790	878	6720	1150	1070	1110	1020	1010	957
13	932	1060	2280	2800	887	6480	1040	1070	1070	981	1010	1040
14	932	1060	2300	2530	1010	4720	1040	1070	1000	857	1010	1040
15	923	1080	2320	2310	1190	2530	1040	1070	983	908	1010	1040
16	923	1090	3180	2310	941	1910	1040	1070	967	1230	1010	1040
17	923	1090	4490	2230	1470	1780	1040	1070	993	1420	1010	1040
18	932	1100	4390	2300	1640	1770	1040	1070	1010	1660	1010	1040
19	932	1100	4450	2070	1830	1770	1040	1030	1010	1670	973	1140
20	932	1100	3600	1770	2040	1780	1060	1030	965	1670	952	1200
21	932	1100	2530	1770	2170	1660	1070	1070	910	1670	951	1200
22	932	1100	2310	1770	2280	1370	1070	1070	895	1360	888	1190
23	932	1090	2300	1770	2500	1360	1070	1030	870	1010	888	1160
24	932	1090	2300	1770	2720	1360	1070	1010	801	1010	892	1040
25	995	1370	2280	1780	2670	1220	1070	1070	778	1010	890	1040
26	1100	1280	2270	1770	2660	1130	1070	1140	854	1010	890	1040
27	1140	1090	2130	1780	2640	1130	1070	1180	889	1010	890	1040
28	1010	1090	1900	1780	2300	1070	1070	1200	944	1010	888	1040
29	923	1090	1900	1780	---	1210	1070	1200	989	1010	890	1040
30	932	1170	1900	1770	---	1790	1070	1200	993	1010	898	1040
31	932	---	1900	1780	---	2160	---	1200	---	1020	892	---
TOTAL	29355	31456	82520	92420	48190	74870	40710	33690	30071	34257	30242	30175
MEAN	947	1049	2662	2981	1721	2415	1357	1087	1002	1105	976	1006
MAX	1140	1370	4610	9560	2720	6720	2160	1200	1150	1670	1040	1200
MIN	923	932	1550	1770	878	1070	1040	1010	778	857	888	889
AC-FT	58230	62390	163700	183300	95580	148500	80750	66820	59650	67950	59980	59850

CAL YR 1982 TOTAL 631725 MEAN 1731 MAX 14200 MIN 642 AC-FT 1253000
WTR YR 1983 TOTAL 557956 MEAN 1529 MAX 9560 MIN 778 AC-FT 1107000

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1965 to September 1982.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
DEC , 1982											
15...	1200	49	--	6.0	20	11.9	K11	.20	.40	.60	.040
MAR , 1983											
23...	1225	49	7.2	7.0	3.0	12.3	<1	.10	.50	.60	.010
JUN											
22...	1210	57	6.6	9.5	2.0	10.8	K3	<.10	.30	--	.050
SEP											
14...	1000	49	7.3	13.0	10	9.0	K1	<.10	.30	--	.040

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12089208 CENTRALIA POWER CANAL NEAR MCKENNA, WA

LOCATION.--Lat 46°54'01", long 122°29'50", in NE¼SW¼ sec.1, T.16 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on right bank 500 ft downstream from headworks at dam, and 3.7 mi southeast of McKenna.

PERIOD OF RECORD.--March 1979 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 330 ft, from topographic map.

REMARKS.--Records excellent except those below 200 ft³/s, which are fair. Flow regulated by headworks 500 ft upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 887 ft³/s Dec. 15, 1979, gage height, 7.39 ft; minimum observed, 59 ft³/s May 2-4, 1983, gage height, 0.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 830 ft³/s July 18, 20, gage height, 7.03 ft; minimum observed 59 ft³/s, May 2-4, gage height, 0.40 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	379	139	636	667	670	703	695	536	631	648	673	463
2	379	137	639	670	667	700	694	60	666	727	737	499
3	379	136	660	679	653	700	697	59	646	742	737	500
4	379	135	652	691	645	682	698	174	618	728	719	510
5	379	135	620	695	642	667	697	288	608	691	680	500
6	372	137	614	663	642	674	688	511	596	628	671	498
7	375	137	614	700	645	666	677	636	595	627	566	497
8	309	135	614	676	629	680	662	730	610	636	660	468
9	216	135	617	688	624	709	636	785	607	621	656	369
10	215	209	642	689	593	701	634	803	607	607	650	510
11	214	538	653	649	583	[illegible]	625	764	709	604	638	525
12	251	556	652	689	582	703	597	573	788	621	667	518
13	376	621	662	706	603	703	577	579	763	727	649	523
14	375	588	662	698	608	700	543	575	703	793	628	517
15	374	560	680	683	624	709	544	586	635	771	627	503
16	360	545	730	685	599	691	575	590	639	804	628	500
17	369	599	724	673	649	673	607	584	587	809	618	488
18	373	634	689	673	700	679	606	583	677	825	620	488
19	384	638	676	669	695	673	608	578	772	823	587	469
20	383	607	697	653	712	669	604	575	785	825	548	376
21	377	610	730	679	713	660	624	582	756	823	541	743
22	385	625	695	676	727	620	615	578	715	796	495	774
23	560	627	689	680	689	615	615	556	713	657	472	769
24	517	624	677	683	686	614	638	498	728	635	486	691
25	462	631	673	677	706	606	657	518	604	628	486	680
26	564	627	669	677	692	595	621	565	586	652	483	671
27	615	607	666	697	695	588	597	584	582	631	483	673
28	245	638	660	698	682	582	569	587	579	664	432	667
29	190	628	673	688	---	631	562	586	597	646	307	666
30	139	627	670	682	---	733	558	584	627	610	270	646
31	138	---	669	674	---	715	---	584	---	590	291	---
TOTAL	11033	13565	20604	21107	18335	20736	18720	16791	19731	21589	17805	16701
MEAN	356	452	665	681	656	669	624	542	658	696	574	557
MAX	615	638	730	706	727	733	698	803	788	825	737	774
MIN	138	135	614	649	582	582	543	59	579	590	270	369
AC-FT	21880	26910	40870	41870	36410	41130	37130	33300	39140	42820	35320	33130

CAL YR 1982 TOTAL 217306 MEAN 595 MAX 764 MIN 135 AC-FT 431000
WTR YR 1983 TOTAL 216739 MEAN 594 MAX 825 MIN 59 AC-FT 429900

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8.

DRAINAGE AREA.--517 mi^{2}.

PERIOD OF RECORD.--October 1947 to September 1968, May 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1968, water-stage recorder at site 100 ft downstream at present datum.

REMARKS.--Records excellent. Flow regulated by Alder Reservoir (see sta 12085000) at mile 44.2 and La Grande Reservoir (see sta 12085500) at mile 42.5. Centralia Power Canal (see sta 12089208) diverts water 4.4 mi upstream from station, which is returned to river at powerplant 9.2 mi downstream from station. Minor diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--26 years (water years 1948-67, 1978-83), 1,370 ft^{3}/s, 992,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft^{3}/s Jan. 29, 1965, gage height, 13.00 ft at site then in use; minimum, 20 ft^{3}/s Sept. 10, 11, 1965, Aug. 31, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,500 ft^{3}/s Jan. 8, gage height, 8.71 ft; minimum, 365 ft^{3}/s Nov. 11, Aug. 3, gage height, 1.71 ft Nov. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	546	1050	1350	1460	1510	2220	2280	618	576	512	452	558
2	546	996	1850	1450	1470	2180	2290	1200	501	660	385	576
3	552	952	3000	1530	1350	2130	2220	1210	501	636	375	523
4	546	944	5200	1770	1260	1890	2110	1060	501	540	375	468
5	558	1020	4750	3270	1250	1560	2010	896	496	490	395	457
6	570	1220	4070	3650	1250	1570	1760	723	501	496	400	441
7	648	1220	2500	5340	1280	1500	1520	636	501	501	400	435
8	758	1100	2300	9610	1150	1720	1390	636	496	496	400	446
9	864	1020	2170	9210	1090	2590	1160	674	490	507	405	588
10	824	896	2060	7860	864	4780	1140	772	534	496	400	430
11	800	512	1990	6170	779	6040	1080	702	588	501	395	512
12	737	507	1960	3910	765	5930	880	786	688	512	405	523
13	582	518	2160	2890	936	5630	723	716	594	816	395	582
14	576	534	2140	2620	978	4490	716	674	496	1110	400	570
15	576	552	2460	2300	1100	2470	681	800	507	608	395	570
16	588	600	4120	2230	920	1870	642	872	496	856	390	564
17	588	864	4970	2120	1340	1570	606	779	512	912	395	570
18	612	1170	4490	2160	1850	1500	606	751	546	1110	395	588
19	582	1110	4350	2120	1780	1450	588	716	723	1090	395	716
20	576	969	3910	1730	2010	1410	600	648	1010	1090	395	980
21	576	856	2910	1610	2070	1350	600	660	681	1060	400	501
22	667	765	2620	1560	2140	1010	606	630	518	864	400	463
23	588	688	2460	1620	2530	978	612	606	534	501	400	452
24	546	642	2290	1580	3100	952	630	612	540	496	395	390
25	594	808	2180	1570	3060	896	606	606	501	496	395	385
26	636	848	2110	1560	2840	832	600	618	507	507	395	390
27	688	618	1980	1800	2700	800	606	630	501	501	395	395
28	1070	928	1610	1880	2340	751	606	642	501	512	441	400
29	1880	1040	1550	1720	---	1150	612	636	507	501	624	395
30	1380	1040	1510	1630	---	2240	612	624	546	501	793	405
31	1110	---	1480	1560	---	2520	---	630	---	501	737	---
TOTAL	22364	25987	84500	91490	45712	67979	31092	22763	16593	20579	13322	15173
MEAN	721	866	2726	2951	1633	2193	1036	734	553	664	430	506
MAX	1880	1220	5200	9610	3100	6040	2290	1210	1010	1110	793	980
MIN	546	507	1350	1450	765	751	588	606	490	490	375	385
AC-FT	44360	51550	167600	181500	90670	134800	61670	45150	32910	40820	26420	30100

CAL YR 1982 TOTAL 529555 MEAN 1448 MAX 14200 MIN 385 AC-FT 1048000
WTR YR 1983 TOTAL 457554 MEAN 1254 MAX 9610 MIN 375 AC-FT 907600

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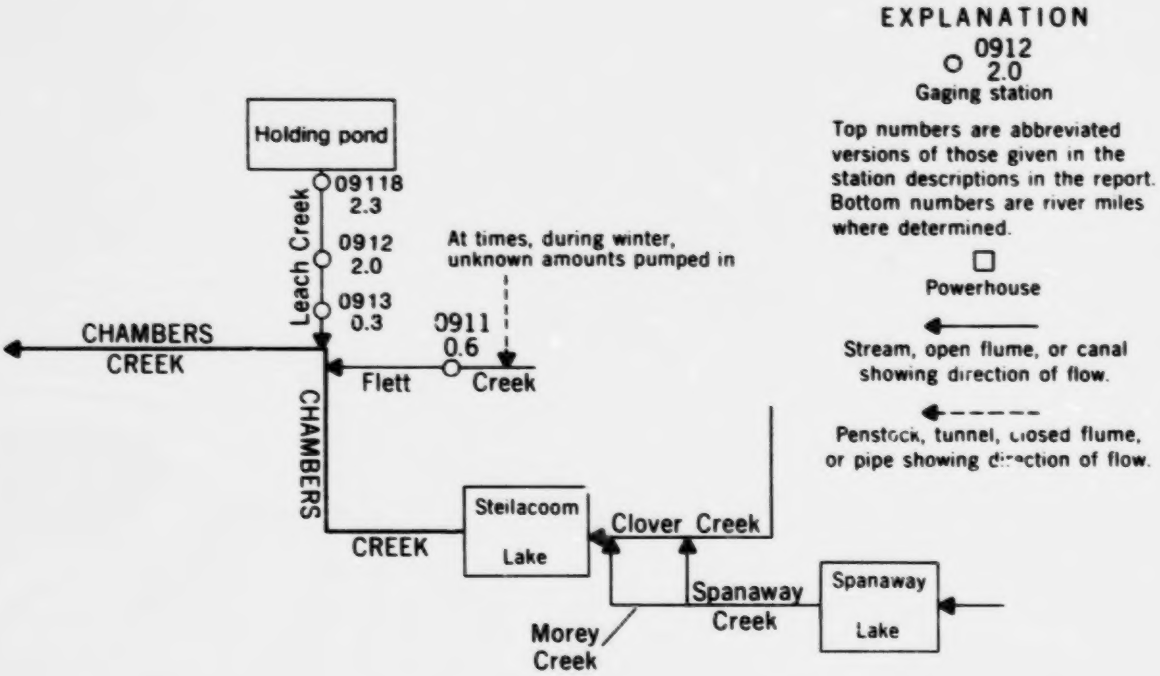
Holding pond
09118
2.3
Leach Creek
0912
2.0
0913
0.3
At times, during winter, unknown amounts pumped in
0911
0.6
CHAMBERS CREEK
Flett
Creek
CHAMBERS
CREEK
Steilacoom Lake
Clover Creek
Spanaway Creek
Spanaway Lake
Morey Creek
EXPLANATION
0912
2.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 10.—Gaging stations in Chambers Creek basin.

12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE¼SW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at 75th Street, 0.6 mi upstream from mouth and 0.7 mi west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi², excludes 0.68 mi² storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 200 ft, from topographic map.

REMARKS.--Records poor. Storm sewer drainage upstream from station. Several diversions for irrigation and industrial use. At times during winter months 1,000 gpm are pumped into creek for short intervals from Mountain View Memorial Park. Since October 1979, Flett Creek flood control retention ponds store and release flood water upstream from station.

AVERAGE DISCHARGE.--24 years, 9.67 ft³/s, 7,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s Mar. 5, 1972, gage height, 2.97 ft, from rating curve extended above 45 ft³/s on basis of computation of peak flow over weir at gage height 2.82 ft; minimum, 0.29 ft³/s Aug. 27, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 51 ft³/s Mar. 9, gage height, 2.65 ft; minimum, 2.8 ft³/s Oct. 1, 5, gage height, 1.67 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	11	15	18	27	32	25	10	7.4	9.9	5.2	13
2	4.0	13	20	18	24	35	30	10	7.4	13	5.3	14
3	3.9	14	25	20	24	37	25	10	7.6	12	5.1	11
4	4.0	12	42	25	24	33	24	9.9	7.2	12	4.9	9.5
5	3.8	9.5	39	41	24	34	23	10	6.9	10	4.7	8.6
6	5.7	8.2	33	43	26	35	22	9.9	6.8	9.7	4.6	7.7
7	7.5	9.0	33	41	27	43	21	12	6.4	9.7	4.7	7.3
8	6.3	8.0	27	48	27	39	19	12	6.2	10	4.7	7.8
9	6.2	7.5	25	44	30	50	17	12	5.4	11	4.6	10
10	5.4	7.5	21	47	31	45	16	10	11	10	4.5	9.8
11	4.9	7.5	17	48	31	47	16	9.8	7.6	10	4.2	9.9
12	4.7	7.5	19	46	31	39	16	9.0	6.4	13	5.0	8.3
13	4.5	7.0	21	44	35	40	15	9.6	5.9	17	4.8	7.8
14	4.4	7.0	22	43	34	33	15	9.6	5.6	17	4.7	7.7
15	4.2	8.0	24	42	31	32	15	10	6.3	17	4.6	7.1
16	4.5	10	35	41	31	30	14	9.3	5.8	15	4.5	7.8
17	4.5	15	37	40	32	30	14	9.2	7.8	13	4.4	7.4
18	4.2	20	37	32	34	29	13	9.3	8.5	11	4.4	9.4
19	4.3	15	36	28	35	27	13	8.9	9.6	10	4.3	12
20	4.2	13	37	28	31	24	13	8.7	9.2	9.4	4.2	9.1
21	6.0	12	37	28	31	23	12	8.9	8.8	8.9	4.3	8.7
22	11	10	37	27	33	23	12	8.9	8.9	8.7	4.5	8.0
23	9.8	9.0	32	28	44	20	12	8.5	11	8.3	3.7	7.7
24	9.1	9.0	34	29	46	19	13	8.2	11	8.4	4.3	7.3
25	8.0	8.0	26	30	45	20	12	7.9	10	8.6	4.6	7.2
26	21	9.0	29	38	44	18	12	7.6	9.6	9.6	4.2	7.1
27	23	10	21	43	39	19	12	7.7	8.8	11	4.3	7.1
28	18	11	20	41	38	19	11	7.6	8.3	12	4.5	7.0
29	18	12	20	33	---	23	11	6.8	8.3	9.9	7.6	7.7
30	13	13	19	38	---	25	10	6.7	8.4	8.0	13	7.4
31	9.0	---	18	29	---	29	---	6.9	---	6.3	14	---
TOTAL	241.1	312.7	854	1101	909	952	483	284.9	238.1	339.4	162.4	260.4
MEAN	7.78	10.4	27.5	35.5	32.5	30.7	16.1	9.19	7.94	10.9	5.24	8.68
MAX	23	20	42	48	46	50	30	12	11	17	14	14
MIN	3.8	7.0	15	18	24	18	10	6.7	5.4	6.3	3.7	7.0
AC-FT	478	620	1690	2180	1800	1890	958	565	472	673	322	517

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CAL YR 1982     TOTAL     5869.3     MEAN     16.1     MAX     58     MIN     1.6     AC-FT     11640
WTR YR 1983     TOTAL     6138.0     MEAN     16.8     MAX     50     MIN     3.7     AC-FT     12170
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NOTE.--No gage-height record Nov. 7 to Dec. 3.

12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA

LOCATION.--Lat 47°13'29", long 122°30'32", in NE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at holding pond dam, 0.2 mi north of southern city limits of Fircrest, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--4.59 mi², includes 0.68 mi² of storm drainage from Flett Creek basin.

PERIOD OF RECORD.--July 1967 to current year.

REVISED RECORDS.--WDR WA-77-1: 1975(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 200 ft above National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Records poor. Drainage into basin influenced by urbanization of area. Flow can be regulated by manually operated gate in flood-control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No known diversion upstream from station.

AVERAGE DISCHARGE.--16 years, 4.09 ft³/s, 2,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 118 ft³/s Dec. 15, 1979, gage height, 12.06 ft, from rating curve extended above 45 ft³/s; minimum, little or no flow Aug. 8, 9, 1983.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1982: Maximum discharge, 110 ft³/s Oct. 6, gage height, 11.80 ft, from floodmarks; minimum, 0.45 ft³/s Aug. 6, gage height, 7.55 ft.

WATER YEAR 1983: Maximum discharge, 101 ft³/s Dec. 3, gage height, 11.59 ft: minimum, little or no flow on Aug. 8, 9, due to regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	1.2	8.6	2.0	5.7	12	3.5	2.0	1.8	1.6	1.5	1.4
2	2.8	1.3	11	3.3	4.3	4.4	4.7	4.7	2.1	7.3	1.5	1.5
3	.81	26	3.0	4.0	2.6	7.2	3.0	3.2	2.2	3.8	1.5	4.1
4	.65	1.7	2.9	3.7	2.3	4.7	3.0	2.1	2.0	2.0	1.5	4.9
5	13	4.2	39	1.7	2.2	2.3	2.1	2.1	2.0	1.8	1.5	1.8
6	89	1.5	10	1.5	2.1	2.2	2.0	2.1	2.0	1.7	1.4	1.5
7	21	5.5	3.0	1.5	2.1	2.1	2.0	2.0	2.1	1.5	1.4	1.5
8	17	6.0	2.2	2.3	2.0	4.5	1.8	2.7	2.1	1.5	1.5	1.6
9	6.2	1.7	5.4	1.7	2.0	16	1.8	2.0	2.1	1.5	2.5	14
10	2.1	1.6	13	2.5	1.8	4.7	1.8	2.1	2.1	1.4	1.5	4.2
11	1.8	25	2.5	4.7	5.2	13	19	2.2	2.1	1.4	1.4	1.5
12	1.7	11	2.1	3.0	9.8	5.5	6.0	2.1	2.2	1.4	1.4	1.5
13	1.7	4.3	16	2.5	48	15	17	2.1	2.2	1.5	5.2	1.3
14	1.7	26	6.0	1.7	54	4.7	6.5	2.1	2.2	7.8	1.4	1.2
15	1.7	5.7	29	6.0	16	3.3	4.1	2.1	2.1	1.6	1.4	1.2
16	1.7	6.2	4.0	32	26	2.3	2.3	2.1	2.0	1.5	1.4	1.2
17	1.7	14	3.0	18	29	2.1	3.0	2.9	2.0	1.5	1.4	1.2
18	1.7	3.5	14	4.4	29	2.0	2.1	2.1	2.1	1.5	1.4	1.2
19	1.6	3.0	21	2.5	9.6	1.7	2.1	2.1	2.0	1.5	1.4	2.2
20	2.0	2.9	3.5	2.1	37	1.7	2.1	2.1	1.8	1.5	1.5	2.2
21	2.2	22	2.3	1.8	5.7	1.7	2.0	2.2	2.2	1.5	1.4	1.2
22	2.1	25	2.6	13	6.2	1.7	2.1	2.1	1.8	1.5	1.5	1.2
23	1.6	19	2.0	21	3.3	2.0	2.1	2.0	1.7	1.5	1.5	1.2
24	1.5	2.8	8.7	24	2.9	1.7	2.1	2.1	1.7	1.5	1.6	7.3
25	1.4	2.2	2.2	8.4	2.6	1.7	2.1	2.1	1.8	1.5	1.6	2.1
26	1.6	2.0	5.0	26	12	4.0	2.1	2.2	6.1	1.4	1.6	3.5
27	5.0	1.6	4.9	5.1	4.0	2.2	2.2	2.1	6.5	1.4	1.5	1.2
28	8.5	1.4	8.6	6.8	7.5	2.3	9.1	2.1	4.4	1.8	1.8	7.0
29	6.0	3.3	2.5	3.7	---	13	2.2	2.1	1.8	1.4	2.5	1.5
30	6.1	6.4	1.8	8.7	---	8.0	2.1	2.0	4.7	1.7	1.8	1.2
31	2.0	---	2.5	3.8	---	9.9	---	2.0	---	1.4	1.4	---
TOTAL	213.36	238.0	242.3	223.4	334.9	159.6	118.0	69.9	73.9	61.9	51.9	78.6
MEAN	6.88	7.93	7.82	7.21	12.0	5.15	3.93	2.25	2.46	2.00	1.67	2.62
MAX	89	26	39	32	54	16	19	4.7	6.5	7.8	5.2	14
MIN	.65	1.2	1.8	1.5	1.8	1.7	1.8	2.0	1.7	1.4	1.4	1.2
AC-FT	423	472	481	443	664	317	234	139	147	123	103	156

CAL YR 1981 TOTAL 1711.46 MEAN 4.69 MAX 89 MIN .65 AC-FT 3390
WTR YR 1982 TOTAL 1865.76 MEAN 5.11 MAX 89 MIN .65 AC-FT 3700

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12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	2.4	1.6	1.7	1.4	7.6	12	2.0	.90	11	.65	11
2	1.4	2.4	11	10	1.4	5.1	6.7	1.8	.86	1.6	.64	5.4
3	1.2	4.5	65	15	1.4	6.3	1.8	1.8	.86	.76	.61	2.0
4	1.2	14	25	33	1.4	2.7	1.7	1.8	.90	.76	.61	1.8
5	1.4	15	7.6	61	1.3	9.8	1.7	2.7	.99	.76	.62	1.7
6	14	4.1	16	19	7.2	6.6	1.6	3.0	1.3	.76	.61	1.8
7	5.5	1.5	2.7	17	1.7	11	2.0	18	1.5	.76	.61	1.8
8	3.2	1.2	2.4	29	2.2	22	1.6	17	1.7	5.7	.54	4.2
9	2.0	1.2	2.2	19	17	15	1.6	5.2	1.8	.90	.08	2.1
10	1.7	1.2	2.2	22	9.7	11	1.8	2.6	16	.76	2.3	9.4
11	1.6	1.2	2.1	4.4	6.0	3.7	1.6	1.8	3.4	1.1	1.7	2.2
12	1.6	1.2	18	3.9	12	5.9	1.7	1.1	.94	13	.62	1.8
13	1.6	1.2	4.6	3.5	7.7	7.1	1.7	.70	.80	15	.57	1.7
14	1.8	1.2	14	3.3	5.3	7.9	1.6	2.3	1.4	.87	.53	1.7
15	1.6	2.1	20	3.0	5.4	2.9	1.6	.94	3.5	.84	.52	1.7
16	3.2	17	36	3.2	3.9	2.7	1.6	.76	1.4	.80	.53	1.7
17	2.6	33	18	3.2	16	2.6	2.0	.80	10	.76	.55	1.7
18	1.8	11	9.4	3.2	3.7	2.4	1.8	.93	6.2	.75	.54	17
19	1.8	5.6	10	10	3.9	2.2	2.1	.71	2.6	1.5	.53	2.0
20	1.9	1.7	22	2.0	5.6	2.3	2.0	.71	1.1	.82	.51	1.7
21	14	1.2	11	1.7	6.1	4.1	1.8	.69	.90	.76	.53	1.8
22	15	1.3	14	6.6	9.1	4.1	3.2	.70	5.7	.76	.52	1.8
23	2.2	1.3	3.5	12	25	2.4	2.3	.75	1.9	.73	.54	1.8
24	1.8	1.2	2.7	5.4	19	2.5	4.4	.75	1.5	.70	.54	1.8
25	5.5	1.2	4.8	3.0	8.3	2.4	2.1	.73	1.0	.92	1.2	1.7
26	6.9	2.6	4.1	14	7.7	2.3	2.1	.75	.92	.66	1.9	2.0
27	2.3	6.4	2.4	19	6.6	3.7	2.0	.76	.91	6.3	1.9	2.0
28	25	9.9	2.2	2.5	3.3	6.2	1.8	.76	.93	.86	10	2.0
29	30	14	2.1	1.8	---	14	1.8	.77	1.1	.65	8.2	2.0
30	1.9	9.7	2.0	2.4	---	11	1.8	.82	1.1	.65	19	2.5
31	2.6	---	1.8	1.6	---	2.3	---	1.4	---	.65	2.4	---
TOTAL	159.5	171.5	340.4	336.4	199.3	191.8	73.5	75.53	74.11	72.85	60.60	93.8
MEAN	5.15	5.72	11.0	10.9	7.12	6.19	2.45	2.44	2.47	2.35	1.95	3.13
MAX	30	33	65	61	25	22	12	18	16	15	19	17
MIN	1.2	1.2	1.6	1.6	1.3	2.2	1.6	.69	.80	.65	.08	1.7
AC-FT	316	340	675	667	395	380	146	150	147	144	120	186

CAL YR 1962 TOTAL 1833.9 MEAN 5.02 MAX 65 MIN 1.2 AC-FT 3640
WTR YR 1983 TOTAL 1849.29 MEAN 5.07 MAX 65 MIN .08 AC-FT 3670

12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 1.0 mi south of Fircrest, and 2 mi upstream from mouth.

DRAINAGE AREA.--4.73 mi^2 includes 0.68 mi^2 storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Prior to Oct. 19, 1979, at site 20 ft downstream at same datum. Elevation of gage is 190 ft, from topographic map.

REMARKS.--Records good except for period of no gage-height record, Dec. 4 to Mar. 24, which are poor. Since Oct. 1, 1961, flow may be regulated at dam upstream from station for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. Drainage into upper end of basin influenced by urbanizing of area. No known diversion upstream from station.

AVERAGE DISCHARGE.--26 years, 4.33 ft^3/s, 12.43 in/yr, 3,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 198 ft^3/s Feb. 28, 1972, gage height, 3.51 ft, from rating curve extended above 60 ft^3/s; minimum, 0.1 ft^3/s Sept. 22, 1965, gage height, 1.02 ft at site in use; minimum gage height, 0.15 ft June 24, 1980, due to regulation.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 124 ft^3/s Dec. 3, gage height, 2.89 ft; minimum, 1.1 ft^3/s Aug. 8, 9, gage height, 0.20 ft, due to regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.3	2.5	2.8	3.3	8.8	13	2.7	2.5	15	2.6	11
2	2.2	2.3	11	11	3.2	5.9	8.3	2.7	2.5	3.5	2.8	5.7
3	1.8	4.0	67	17	3.2	7.2	3.4	2.7	2.3	2.4	2.6	2.7
4	1.8	13	27	39	3.2	4.6	3.1	2.7	2.5	2.4	2.6	2.6
5	1.9	16	8.2	65	3.1	12	2.9	3.2	2.5	2.4	2.6	2.5
6	14	5.0	17	22	9.4	8.5	2.9	3.4	2.3	2.4	2.6	2.6
7	5.5	2.6	3.8	21	3.6	15	3.1	17	2.5	2.4	2.8	2.6
8	3.2	2.5	3.5	32	4.8	24	2.9	16	2.5	8.7	2.2	4.8
9	2.3	2.2	3.3	22	19	17	2.9	5.7	2.5	2.8	1.2	2.9
10	1.9	2.0	3.2	24	13	13	3.1	6.0	16	2.4	4.4	9.9
11	1.9	2.0	3.1	5.2	8.2	4.8	2.9	2.6	4.8	7.2	4.1	2.9
12	1.9	2.0	19	4.8	14	7.0	2.7	2.6	2.8	16	2.6	2.6
13	1.9	2.0	5.5	4.1	10	8.0	2.7	2.5	2.6	18	2.6	2.6
14	2.2	2.0	16	4.0	7.4	8.8	2.7	4.2	3.1	2.9	2.4	2.6
15	1.9	3.1	25	3.8	7.8	5.4	2.9	2.9	4.8	3.0	2.4	2.6
16	3.4	18	40	3.8	5.8	4.4	2.7	2.6	3.1	2.6	2.4	2.6
17	2.6	37	19	3.8	19	4.2	2.9	2.6	9.9	2.8	2.4	2.5
18	2.2	12	11	5.2	5.4	4.0	2.7	2.8	6.7	2.8	2.4	19
19	2.0	6.2	14	11	6.4	3.8	2.7	2.5	4.0	3.4	2.4	2.9
20	2.2	2.5	24	2.5	7.4	3.9	2.7	2.5	2.8	2.8	2.4	2.7
21	13	2.2	12	2.4	8.5	5.0	2.7	2.5	2.6	2.6	2.4	2.7
22	15	2.0	14	8.0	11	5.2	3.9	2.5	6.8	2.6	2.6	2.6
23	2.7	2.0	4.6	14	29	3.3	2.9	2.5	3.5	2.6	2.9	2.6
24	2.3	1.9	4.8	6.0	22	3.4	4.6	2.5	3.1	2.6	2.4	2.6
25	5.2	1.9	6.8	4.0	9.6	3.1	2.7	2.5	2.6	3.0	2.4	2.7
26	6.7	3.2	5.0	18	9.1	3.2	2.9	2.5	2.4	2.6	2.4	2.7
27	2.9	6.7	4.0	22	8.2	4.0	2.7	2.5	2.4	9.3	2.6	2.7
28	26	10	3.3	4.8	4.7	6.2	2.7	2.5	2.4	3.0	8.3	2.6
29	31	15	3.1	3.9	---	17	2.7	2.3	2.8	2.6	8.5	2.7
30	2.6	9.9	2.9	4.4	---	13	2.7	2.3	2.8	2.6	21	2.6
31	2.7	---	2.9	3.6	---	3.4	---	2.9	---	2.6	3.1	---
TOTAL	168.8	193.5	386.5	395.1	259.3	237.1	103.7	117.4	114.1	142.0	111.1	116.8
MEAN	5.45	6.45	12.5	12.7	9.26	7.65	3.46	3.79	3.80	4.58	3.58	3.89
MAX	31	37	67	65	29	24	13	17	16	18	21	19
MIN	1.8	1.9	2.5	2.4	3.1	3.1	2.7	2.3	2.3	2.4	1.2	2.5
CFSM	1.15	1.36	2.64	2.68	1.96	1.62	.73	.80	.80	.97	.76	.82
IN.	1.33	1.52	3.04	3.11	2.04	1.86	.82	.92	.90	1.12	.87	.92
AC-FT	335	384	767	784	514	470	206	233	226	282	220	232

CAL YR 1982 TOTAL 2205.6 MEAN 6.04 MAX 67 MIN 1.8 CFSM 1.28 IN. 17.35 AC-FT 4370
WTR YR 1983 TOTAL 2345.4 MEAN 6.43 MAX 67 MIN 1.2 CFSM 1.36 IN. 18.45 AC-FT 4650

12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW¼NW¼ sec. 26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 0.3 mi upstream from mouth, and 4.1 mi northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi², includes 0.68 mi² storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi².

PERIOD OF RECORD.--February 1957 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 240 ft, from topographic map. Prior to June 27, 1973, water-stage recorder at site 150 ft upstream at different datum. Supplementary water-stage recorder at site 50 ft downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973, to Mar. 14, 1975, nonrecording gage at site 350 ft upstream at different datum.

REMARKS.--Records poor. Drainage basin influenced by urbanizing of area. Some pumping for community use upstream from gage. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin.

AVERAGE DISCHARGE.--26 years, 10.2 ft³/s, 7,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 238 ft³/s Mar. 5, 1972, gage height, 6.88 ft, from high-water mark in well, from rating curve extended above 60 ft³/s, site and datum then in use; maximum gage height, 10.92 ft Feb. 28, 1972, backwater from partially plugged culvert, site and datum then in use; minimum discharge, 2.0 ft³/s July 3, 1961.

EXTREMES FOR CURRENT PERIOD.--Water year 1982: Maximum discharge, not determined, maximum gage height, 3.24 ft Oct. 6; minimum daily, 6.0 ft³/s Feb. 14.

Water year 1983: Maximum discharge, 120 ft³/s Dec. 3, gage height, 3.8 ft; minimum daily, 5.2 ft³/s Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	8.4	17	8.0	14	23	12	9.3	9.0	8.5	7.4	6.8
2	11	8.6	35	10	13	13	12	11	8.8	10	7.4	6.8
3	6.4	8.8	10	12	9.8	14	13	12	8.8	14	7.2	8.5
4	6.2	7.4	9.3	9.5	8.8	15	11	9.3	8.8	8.5	7.4	10
5	14	7.2	77	8.0	8.6	11	11	9.3	8.8	8.1	7.2	7.9
6	130	7.4	37	7.0	8.6	11	11	9.0	8.8	7.6	7.2	7.0
7	49	7.4	23	7.0	8.4	11	10	9.0	8.8	7.2	7.2	6.6
8	29	7.4	21	8.0	8.2	11	10	10	8.5	7.2	7.2	6.6
9	14	7.0	25	7.0	7.9	26	10	9.5	8.8	7.0	8.1	20
10	7.0	6.4	41	8.0	7.7	12	10	9.3	8.8	7.0	7.6	12
11	7.0	45	22	12	11	23	27	9.5	8.8	7.0	7.2	9.0
12	6.4	85	21	10	14	14	17	9.0	9.3	7.0	7.2	7.0
13	6.7	12	39	11	72	24	27	8.8	9.3	7.2	10	6.5
14	7.0	55	30	9.0	87	15	15	8.8	9.0	12	8.3	6.5
15	7.0	22	73	12	32	13	13	8.8	9.0	7.9	8.1	6.5
16	6.5	18	26	45	47	12	11	8.8	8.8	7.6	8.1	6.5
17	6.2	28	22	30	49	11	12	9.7	8.5	7.4	7.9	6.5
18	6.2	11	18	15	43	11	11	9.0	8.5	7.6	7.6	6.5
19	6.2	7.4	40	9.0	23	11	11	9.0	8.5	7.4	7.9	8.0
20	6.5	8.1	15	8.3	64	10	10	9.0	8.5	7.6	7.9	8.0
21	7.0	43	11	7.9	16	10	10	9.0	9.0	7.4	7.9	7.0
22	6.8	50	12	16	15	10	10	8.8	8.8	7.4	7.6	6.5
23	6.4	46	9.0	38	12	11	10	9.0	8.8	7.2	7.4	6.5
24	6.0	11	18	45	12	11	10	9.3	8.5	7.4	7.2	12
25	6.0	8.4	9.5	17	11	11	10	9.3	8.5	7.4	7.9	9.0
26	6.5	7.9	12	38	19	12	9.7	9.3	12	7.2	9.3	10
27	13	7.2	11	18	13	11	9.7	9.3	12	7.4	9.3	8.0
28	18	7.0	18	17	13	11	17	9.0	13	7.6	8.1	12
29	15	8.6	9.5	10	---	22	10	9.0	8.8	7.2	7.4	9.0
30	15	11	8.0	12	---	16	9.5	9.0	11	8.1	7.9	6.7
31	12	---	9.0	14	---	19	---	8.8	---	7.4	7.0	---
TOTAL	452.5	567.6	728.3	478.7	648.0	435	369.9	287.9	276.5	245.5	241.1	249.9
MEAN	14.6	18.9	23.5	15.4	23.1	14.0	12.3	9.29	9.22	7.92	7.78	8.33
MAX	130	85	77	45	87	26	27	12	13	14	10	20
MIN	6.0	6.4	8.0	7.0	7.7	10	9.5	8.8	8.5	7.0	7.0	6.5
AC-FT	898	1130	1440	950	1290	863	734	571	548	487	478	496

CAL YR 1981	TOTAL	4854.9	MEAN	13.3	MAX	130	MIN	6.0	AC-FT	9630
WTR YR 1982	TOTAL	4980.9	MEAN	13.6	MAX	130	MIN	6.0	AC-FT	9880

12091300 LEACH CREEK NEAR STEILACOOM, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	6.1	10	12	15	27	38	7.9	9.0	19	7.4	16
2	6.0	5.3	30	24	14	22	34	7.9	8.8	16	7.4	10
3	5.7	6.5	84	37	14	23	16	7.9	8.3	9.3	7.4	7.0
4	5.7	21	52	66	13	13	12	7.9	8.3	9.3	7.4	6.5
5	5.7	22	12	98	12	20	11	8.8	8.3	9.3	7.4	6.5
6	18	14	34	47	27	14	11	8.7	8.3	9.3	7.6	6.5
7	11	7.6	10	34	16	20	10	29	8.5	9.3	7.4	6.5
8	7.2	6.4	9.4	64	14	40	9.4	40	8.7	13	7.4	8.4
9	7.2	7.4	8.9	35	47	38	9.5	17	8.3	11	6.2	7.8
10	6.1	7.9	8.4	51	27	23	10	13	34	8.3	8.1	16
11	5.8	7.9	7.9	12	29	11	9.0	9.3	13	8.1	8.7	5.6
12	5.7	7.9	31	11	34	13	8.3	8.9	12	26	7.6	5.2
13	5.7	7.9	12	10	24	10	8.3	9.0	11	29	7.5	6.5
14	6.1	7.9	20	10	17	10	8.0	10	11	9.1	6.1	6.5
15	5.8	8.2	29	10	16	6.9	7.9	11	14	8.4	5.8	6.4
16	6.8	42	72	10	15	6.5	7.4	8.9	11	8.4	5.4	6.3
17	6.5	72	38	10	32	6.2	7.4	8.8	20	8.2	5.7	6.5
18	6.2	30	30	18	18	5.9	7.4	9.1	18	8.0	6.1	29
19	5.7	19	32	22	19	5.6	7.4	8.8	13	8.4	6.1	8.6
20	5.7	12	47	12	21	6.5	7.4	8.8	11	8.8	6.1	7.7
21	12	11	24	11	25	11	7.4	8.8	9.9	7.9	6.1	7.2
22	28	9.4	32	17	35	12	8.5	8.8	14	7.9	6.2	7.4
23	8.8	9.4	14	91	64	11	8.8	8.9	12	7.9	6.1	7.4
24	7.5	8.2	13	38	57	10	13	8.7	9.9	7.9	6.1	6.9
25	8.0	8.1	15	29	25	9.5	8.0	8.3	10	8.2	6.2	6.1
26	15	10	12	62	23	8.4	8.1	8.3	9.8	7.5	6.5	6.1
27	7.5	13	10	68	22	9.8	8.0	8.3	9.8	12	7.0	6.1
28	32	17	9.0	34	17	12	7.9	8.3	9.8	10	8.0	6.0
29	61	22	9.0	16	---	39	7.9	8.5	9.9	7.4	13	5.9
30	7.7	14	9.0	18	---	47	7.9	8.8	10	7.4	30	6.4
31	7.0	---	9.0	15	---	20	---	9.4	---	7.4	10	---
TOTAL	332.8	440.1	733.6	992	692	511.3	324.9	335.8	349.6	327.7	244.0	245.0
MEAN	10.7	14.7	23.7	32.0	24.7	16.5	10.8	10.8	11.7	10.6	7.87	8.17
MAX	61	72	84	98	64	47	38	40	34	29	30	29
MIN	5.7	5.3	7.9	10	12	5.6	7.4	7.9	8.3	7.4	5.4	5.2
AC-FT	660	873	1460	1970	1370	1010	644	666	693	650	484	486

CAL YR 1982	TOTAL	4739.0	MEAN	13.0	MAX	87	MIN	5.3	AC-FT	9400
WTR YR 1983	TOTAL	5528.8	MEAN	15.1	MAX	98	MIN	5.2	AC-FT	10970

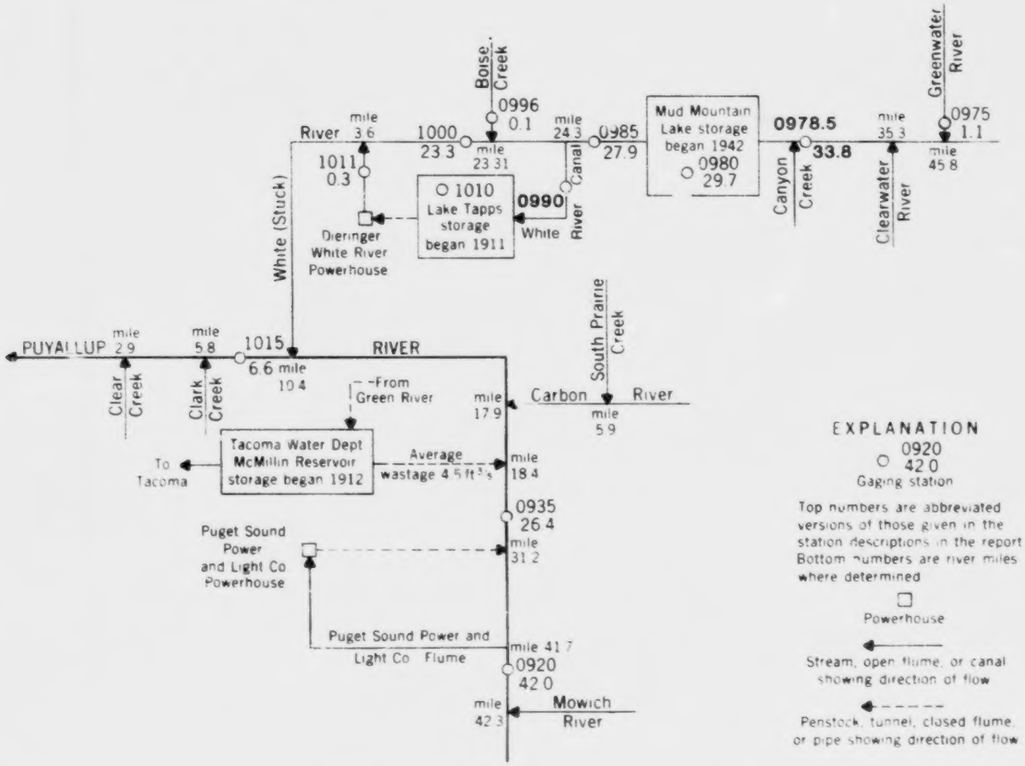
Boise Creek
0996
0.1
Greenwater River
0975
1.1
mile 45.8
River
mile 3.6
1000
23.3
mile 23.31
mile 24.3
0985
27.9
Mud Mountain Lake storage began 1942
0980
29.7
0978.5
33.8
mile 35.3
1011
0.3
1010
Lake Tapps storage began 1911
0990
White
River
Canal
Canyon Creek
Clearwater River
Dieringer White River Powerhouse
White (Stuck)
South Prairie Creek
PUYALLUP
mile 2.9
mile 5.8
1015
6.6
mile 10.4
RIVER
Clear Creek
Clark Creek
From Green River
mile 17.9
Carbon
River
mile 5.9
Tacoma Water Dept McMillin Reservoir storage began 1912
To Tacoma
Average wastage 4.5 ft³/s
mile 18.4
0935
26.4
Puget Sound Power and Light Co Powerhouse
mile 31.2
Puget Sound Power and Light Co Flume
mile 41.7
0920
42.0
mile 42.3
Mowich River
EXPLANATION
0920
42.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 11.—Gaging stations in Puyallup River basin.

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE¼NW¼ sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1,000 ft upstream from Puget Sound Power & Light Co.'s flume headworks, 0.3 mi downstream from Mowich River, 9.8 mi southeast of Electron, and at mile 42.0.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--October 1908 to September 1926, October 1944 to September 1949, October 1957 to current year. October 1926 to September 1933 (monthly discharge only) published in State of Washington Water-Supply Bulletin No. 6.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area. WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,640 ft, from river-profile map. Prior to Jan. 1, 1913, nonrecording gage, and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites near present gage at different datums. Aug. 19, 1960, to Dec. 23, 1980, at site 100 ft downstream at same datum.

REMARKS.--Records good except those above 2,000 ft³/s, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--56 years (water years 1909-33, 1945-49, 1958-83), 528 ft³/s, 77.27 in/yr, 382,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Nov. 22, 1959, gage height, 11.9 ft, from floodmarks, site and datum then in use, result of slope-area measurement; minimum daily, 100 ft³/s Dec. 13, 14, 1972, Oct. 28-30, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s and maximum (*).

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1915	*5,590	*6.57	July 13	1515	3,400	5.68
Jan. 8	0330	2,620	5.32				

Minimum daily discharge, 215 ft³/s Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236	444	341	221	267	378	397	326	683	504	1000	701
2	305	385	347	235	254	364	374	344	659	585	736	606
3	275	345	2650	241	241	345	348	347	593	536	600	472
4	240	392	2120	538	231	337	323	332	499	495	540	428
5	221	420	930	1540	222	329	308	385	467	533	600	353
6	274	448	654	1300	226	331	305	452	485	560	542	336
7	339	388	496	2090	231	354	304	428	556	497	872	328
8	363	349	424	2000	215	428	292	409	618	506	970	281
9	430	315	375	1050	233	980	285	420	563	484	880	268
10	388	291	342	1020	231	1040	277	408	760	424	840	496
11	357	275	319	776	311	721	269	381	579	476	728	667
12	333	267	325	600	367	567	261	367	560	880	540	523
13	314	258	344	520	385	530	254	356	462	2400	535	489
14	316	244	334	452	344	465	248	367	505	2190	580	411
15	314	235	419	406	320	416	246	448	626	1380	585	358
16	304	249	990	385	338	380	251	422	516	930	496	353
17	299	643	666	369	452	351	269	403	677	776	515	299
18	257	550	515	388	488	332	290	409	716	690	510	298
19	240	456	452	428	395	314	317	419	741	684	476	265
20	232	396	426	369	367	300	350	455	734	702	413	246
21	329	345	401	335	335	296	399	536	574	654	424	248
22	973	307	362	317	371	298	378	525	522	648	460	260
23	571	288	329	314	690	282	367	597	576	744	464	288
24	406	275	300	312	872	274	395	661	526	760	480	309
25	347	262	288	293	648	307	344	710	470	744	436	301
26	420	260	281	347	530	281	323	686	490	654	402	347
27	371	316	256	496	452	272	302	659	491	595	424	337
28	498	452	248	385	409	264	290	770	470	642	456	253
29	906	410	238	340	---	436	296	963	508	585	510	235
30	530	361	232	311	---	561	299	987	519	642	776	228
31	452	---	225	286	---	472	---	826	---	920	590	---
TOTAL	11840	10626	16629	18664	10425	13005	9361	15798	17145	23820	18480	10984
MEAN	382	354	536	602	372	420	312	510	572	768	596	366
MAX	973	643	2650	2090	872	1040	399	987	760	2400	1000	701
MIN	221	235	225	221	215	264	246	326	462	424	402	228
CFSM	4.12	3.81	5.78	6.49	4.01	4.53	3.36	5.50	6.16	8.28	6.42	3.94
IN.	4.75	4.26	6.67	7.48	4.18	5.21	3.75	6.33	6.87	9.55	7.41	4.40
AC-FT	23480	21080	32980	37020	20680	25800	18570	31340	34010	47250	36660	21790

CAL YR 1982	TOTAL	201648	MEAN	552	MAX	3060	MIN	221	CFSM	5.95	IN.	80.83	AC-FT	400000
WTR YR 1983	TOTAL	176777	MEAN	484	MAX	2650	MIN	215	CFSM	5.22	IN.	70.86	AC-FT	350600

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW¼SW¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft downstream from highway bridge, 4.0 mi south of Orting, 8.5 mi upstream from Carbon River, and at mile 26.4.

DRAINAGE AREA.--172 mi².

PERIOD OR RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft National Geodetic Vertical Datum of 1929. Prior to Feb. 6, 1946, at site 600 ft upstream at datum 8.93 ft higher. Supplementary water-stage recorder 200 ft upstream at datum 7.1 ft higher than present gage datum, used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft higher.

REMARKS.--Records good except those for flows above 5,000 ft³/s, which are poor. Up to 400 ft³/s diverted for Electron powerplant of Puget Sound Power and Light Co. which is returned to river 4.8 mi above gage. Minor regulation by Electron powerplant.

AVERAGE DISCHARGE.--52 years, 712 ft³/s, 56.21 in/yr, 515,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Nov. 20, 1962, gage height, 11.82 ft, present datum, from rating curve extended above 8,600 ft³/s on basis of slope-area measurement at gage height 12.25 ft, present datum; minimum, 25 ft³/s Nov. 28, 1952; minimum daily, 59 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2330	*7,060	8.42	Jan. 8	0500	6,320	8.08
Jan. 5	1430	5,520	7.72	July 13	1445	5,590	*8.45

Minimum discharge, 222 ft³/s Oct. 20; minimum daily discharge, 253 ft³/s Oct. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	293	664	510	308	442	504	639	413	754	650	1670	1730
2	329	534	485	325	409	481	628	429	710	877	1140	1350
3	324	471	3300	364	389	450	584	442	650	780	827	831
4	305	520	4220	864	374	429	533	417	553	674	668	731
5	293	596	1820	3470	359	421	495	468	504	685	786	505
6	309	734	1280	3170	359	429	477	569	509	704	827	434
7	440	608	904	4400	389	437	468	569	574	633	1330	443
8	450	511	719	4410	359	514	442	590	656	628	1590	331
9	546	445	616	2400	378	1120	437	691	600	622	1500	316
10	475	399	543	2220	370	1470	425	685	855	528	1470	746
11	430	365	488	1610	446	1110	413	584	735	553	1240	1570
12	391	342	489	1200	509	862	397	538	767	998	780	928
13	363	338	633	983	590	780	381	514	584	3760	728	820
14	348	312	546	813	553	691	363	519	579	4140	820	622
15	356	298	621	704	509	611	356	656	735	2880	869	495
16	330	309	2010	645	519	553	359	645	617	1960	656	481
17	358	746	1430	617	622	509	370	595	760	1530	685	397
18	295	839	1010	611	773	481	389	600	884	1280	668	393
19	267	731	861	710	606	450	409	590	959	1190	622	363
20	253	643	790	622	553	429	437	569	991	1200	486	299
21	281	542	721	558	504	417	495	691	754	1010	481	289
22	1120	465	652	514	519	429	481	668	656	975	558	315
23	720	412	568	523	834	401	468	728	754	1160	569	342
24	469	377	501	495	1120	385	514	793	716	1220	595	385
25	387	351	466	468	906	437	463	848	611	1190	548	374
26	490	342	455	495	741	429	425	820	617	1020	481	421
27	463	371	402	820	617	401	405	786	606	820	495	481
28	555	633	377	716	548	385	385	899	569	991	569	311
29	1430	615	353	590	---	533	381	1140	606	800	710	277
30	825	547	336	533	---	869	389	1060	650	869	1720	266
31	653	---	321	481	---	786	---	899	---	1440	1210	---
TOTAL	14548	15060	28427	36639	15297	18203	13408	20415	20515	37767	27298	17246
MEAN	469	502	917	1182	546	587	447	659	684	1218	881	575
MAX	1430	839	4220	4410	1120	1470	639	1140	991	4140	1720	1730
MIN	253	298	321	308	359	385	356	413	504	528	481	266
CFSM	2.73	2.92	5.33	6.87	3.17	3.41	2.60	3.83	3.98	7.08	5.12	3.34
IN.	3.15	3.26	6.15	7.92	3.31	3.94	2.90	4.42	4.44	8.17	5.90	3.73
AC-FT	28860	29870	56380	72670	30340	36110	26590	40490	40690	74910	54150	34210

CAL YR 1982 TOTAL 274616 MEAN 752 MAX 5250 MIN 252 CFSM 4.37 IN. 59.39 AC-FT 544700
WTR YR 1983 TOTAL 264823 MEAN 726 MAX 4410 MIN 253 CFSM 4.22 IN. 57.28 AC-FT 525300

12097500 GREENWATER RIVER AT GREENWATER, WA

LOCATION.--Lat 47°09'13", long 121°38'10", in NE¼NE¼ sec.10, T.19 N., R.9 E., Pierce County, Hydrologic Unit 17110014, on left bank at bridge crossing, 0.7 mi east of Greenwater, and at mile 1.1.

DRAINAGE AREA.--73.5 mi^2.

PERIOD OF RECORD.--September 1911 to August 1912 (fragmentary), May 1929 to September 1977, water years 1980-83 (June to October seasonal records). Published as "near Enumclaw" 1911-12.

REVISED RECORDS.--WSP 1716: 1947(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,720 ft, from river-profile survey. Prior to Aug. 10, 1912, nonrecording gages at sites approximately 500 ft upstream at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 1,400 ft upstream at different datum. Aug. 17, 1934, to Sept. 30, 1977, water-stage recorder at site 500 ft upstream at different datum.

REMARKS.--Records excellent. No regulation above station.

AVERAGE DISCHARGE.--48 years (water years 1930-77), 211 ft^3/s, 38.98 in/yr, 152,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft^3/s Nov. 22, 1959, gage height, 7.67 ft site and datum then in use, from rating curve extended above 1,200 ft^3/s on basis of slope-area measurement of peak flow; minimum, 23 ft^3/s Oct. 7, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 2, 1977, reached a stage of 9.8 ft former site and datum, from floodmarks, discharge, about 10,500 ft^3/s.

EXTREMES FOR JUNE TO OCTOBER.--Maximum discharge, 542 ft^3/s June 1, gage height, 4.74 ft; minimum, 46 ft^3/s Oct. 16, 21, 29, gage height, 2.98 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR NOVEMBER 1982 TO OCTOBER 1983
MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1								542	163	107	87	54
2								458	166	103	74	53
3								406	156	101	57	53
4								363	147	98	66	62
5								333	145	95	63	56
6								304	141	91	61	54
7								291	138	91	62	52
8		*204						287	136	86	60	51
9								281	132	86	63	51
10								291	126	88	88	50
11								274	122	93	116	49
12								262	126	90	88	49
13						*130		243	193	83	77	48
14								228	193	79	72	49
15								223	188	77	68	49
16								214	178	75	65	47
17								217	170	74	63	50
18								212	166	73	81	49
19								201	156	71	85	48
20								220	149	70	74	49
21								198	145	68	69	47
22								190	136	67	67	74
23								195	130	66	64	65
24								185	126	65	62	56
25								178	128	63	60	52
26								175	136	62	59	50
27								168	126	63	59	49
28								163	132	64	58	48
29								163	122	62	56	47
30								163	114	73	55	50
31							*579	---	111	65	---	64
TOTAL								7628	4497	2451	2089	1625
MEAN								254	145	79.1	69.6	52.4
MAX								542	193	107	116	74
MIN								163	111	62	55	47
CFSM								3.46	1.97	1.08	.95	.71
IN.								3.86	2.28	1.24	1.06	.82
AC-FT								15130	8920	4860	4140	3220

* Result of discharge measurement.

12097850 WHITE RIVER BELOW CLEARWATER RIVER, NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'49", long 121°51'32", in NE¼SW¼ sec.12, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 300 ft upstream from Canyon Creek, 1.5 mi downstream from Clearwater River, 6.4 mi east of Buckley, and at mile 33.8.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--June 1974 to September 1976, March 1982 to current year.

REVISED RECORDS.--WDR WA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to March 1982, at datum 47.16 ft higher.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s Dec. 2, 1975, gage height, 55.16 ft, present datum, from high-water mark in well; minimum, 265 ft³/s Nov. 4-6, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,340 ft³/s Dec. 4, gage height, 51.54 ft; minimum, 350 ft³/s Oct. 6, gage height, 47.39 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	399	876	629	481	894	1270	1540	1130	2960	1870	1480	1130
2	404	760	620	488	836	1200	1440	1190	2620	1950	1430	980
3	416	683	3340	546	790	1110	1290	1200	2370	1790	1290	800
4	382	730	5250	1190	750	1070	1170	1210	2250	1730	1200	760
5	366	920	2970	4160	710	1040	1090	1450	2100	1800	1170	674
6	360	1300	2170	3800	701	1030	1030	1620	2070	1810	1180	629
7	505	1040	1640	4860	710	1030	1010	1600	2190	1670	1200	620
8	548	876	1360	5750	656	1310	982	1550	2410	1550	1270	588
9	638	760	1190	3710	656	2250	935	1560	2500	1460	1290	588
10	588	683	1040	3260	656	2770	882	1520	2390	1390	1260	810
11	540	620	925	2850	876	2520	831	1420	2190	1410	1260	1380
12	491	588	930	2370	932	2180	782	1360	2030	1820	1080	1000
13	458	564	1060	2060	956	1980	744	1320	1820	3310	1000	843
14	440	519	959	1780	944	1740	713	1360	1810	3370	1030	770
15	434	491	988	1570	932	1540	693	1460	1990	2460	1030	692
16	434	533	2020	1430	968	1380	691	1360	1880	1970	956	629
17	477	1120	1920	1320	1360	1270	712	1330	2010	1810	920	596
18	428	1470	1500	1240	1830	1170	776	1370	2120	1680	887	638
19	393	1220	1290	1250	1520	1070	885	1380	1920	1660	827	647
20	371	1050	1130	1150	1340	1000	1110	1510	1900	1620	803	556
21	382	909	1010	1060	1210	956	1290	1880	1710	1530	775	533
22	1270	760	914	995	1240	968	1260	2110	1670	1510	787	526
23	1200	701	808	983	1570	909	1220	2300	1780	1600	817	505
24	760	647	716	961	2060	876	1280	2570	1740	1630	767	498
25	612	604	671	904	1990	920	1190	2810	1630	1550	753	498
26	710	580	670	994	1780	854	1120	2920	1690	1470	732	505
27	629	596	590	1410	1570	821	1040	2850	1810	1330	723	526
28	710	683	568	1320	1400	800	989	3090	1810	1370	760	477
29	1690	674	534	1170	---	1360	977	3750	1850	1300	836	452
30	1180	647	516	1060	---	2120	1010	3650	1880	1310	1100	440
31	920	---	498	968	---	1820	---	3410	---	1440	1010	---
TOTAL	19135	23624	40426	57090	31837	42334	30682	59240	61100	54170	31623	20290
MEAN	617	787	1304	1842	1137	1366	1023	1911	2037	1747	1020	676
MAX	1690	1470	5250	5750	2060	2770	1540	3750	2960	3370	1480	1380
MIN	360	491	498	481	656	800	691	1130	1630	1300	723	440
CFSM	1.65	2.10	3.48	4.91	3.03	3.64	2.73	5.10	5.43	4.66	2.72	1.80
IN.	1.90	2.34	4.01	5.66	3.16	4.20	3.04	5.88	6.06	5.37	3.14	2.01
AC-FT	37950	46660	80180	113200	63150	83970	60860	117500	121200	107400	62720	40250

WTR YR 1983 TOTAL 471551 MEAN 1292 MAX 5750 MIN 360 CFSM 3.45 IN. 46.78 AC-FT 935300

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.-- Lat 47°08'27", long 121°55'48", in NE¼NE¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi southeast of Buckley, 5.6 mi downstream from Clearwater River, and at mile 29.7.

DRAINAGE AREA.--400 mi².

PERIOD OF RECORD.--October 1943 to current year. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earthfill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft between elevations 895 ft, invert of outlet tunnel, and 1,215 ft, spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 55,880 acre-ft Aug. 23, 1974, elevation, 1,150.0 ft; no pool at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 8,491 acre-ft June 2, elevation, 1,033.8 ft; minimum observed, 27 acre-ft Aug. 25-29, Sept. 29, 30, elevation, 904.0 ft.

Capacity table (elevation, in feet, and total contents, acre-feet)
(Based on area maps by Corps of Engineers in 1939)

907	39	930	191	970	1,520	1,070	17,380
910	52	935	266	985	2,510	1,100	29,050
915	77	940	366	1,000	3,830	1,150	55,880
920	107	945	491	1,020	6,260		
925	141	955	817	1,040	9,680		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1943	1983	864	113	1283	1761	226	43	4020	189	109	67
2	1898	1755	864	113	594	513	264	47	3491	107	62	51
3	1905	254	1930	113	199	124	233	48	6547	99	57	46
4	1917	483	3058	113	236	127	230	50	3352	95	43	51
5	1905	661	2159	1387	218	864	212	55	1050	95	60	51
6	1892	1556	1467	2668	207	548	65	67	118	1413	93	47
7	1983	979	117	2668	266	371	60	53	139	89	42	76
8	1989	548	110	3547	158	256	39	57	244	89	39	63
9	1989	539	110	2636	566	825	1100	60	389	87	43	76
10	2002	612	3307	2111	1841	1472	1829	60	270	106	67	66
11	1983	569	3730	1996	148	1360	1866	62	230	144	39	848
12	1969	641	117	1413	72	263	2009	62	127	62	38	292
13	1956	635	122	168	67	83	1996	60	99	340	39	149
14	1943	641	107	1138	67	76	83	60	99	2104	37	115
15	1930	389	107	2797	72	1969	31	63	105	1666	35	91
16	1917	519	127	2229	72	2022	31	63	99	615	35	75
17	1950	736	145	1467	67	1983	31	65	105	91	35	72
18	1937	1445	138	147	101	1848	31	65	153	76	35	75
19	1930	1114	138	1413	101	163	35	65	101	68	38	85
20	1911	1077	128	1195	83	52	39	67	106	66	31	69
21	1917	979	127	153	77	52	47	81	94	62	31	67
22	2111	743	131	149	72	52	47	139	1963	60	31	65
23	2287	505	121	149	72	52	47	218	1917	62	31	66
24	2187	413	121	134	106	52	47	497	1707	63	31	65
25	2097	554	121	134	121	52	45	817	1171	313	27	66
26	2145	628	107	132	99	52	43	1219	937	2280	27	66
27	2180	806	113	139	90	52	43	1334	1595	641	27	56
28	844	1014	113	144	84	52	43	1308	1737	130	27	38
29	2287	958	113	146	---	1713	43	1905	979	52	27	27
30	2069	698	113	141	---	1185	43	2138	522	87	40	27
31	1976	---	113	138	---	726	---	2063	---	62	38	---
TOTAL	60949	24434	20138	29991	7140	20720	10858	12896	38466	11413	1314	3008
MEAN	1966	814	650	967	255	668	362	416	1282	368	42.4	100
MAX	2287	1983	3730	3547	1841	2022	2009	2138	8491	2290	109	848
MIN	844	254	107	113	67	52	31	43	94	52	27	27
††	977.6	954.7	921.0	951.8	954.8	939.2	908.0	994.2	935.2	917.6	910.9	905.6
†	1983	806	113	701	809	348	43	3279	270	93	56	33
‡	+33	-1177	-693	+588	+108	-461	-305	+3236	-3009	-177	-37	-23

CAL YR 1982....................‡ +36
WTR YR 1983....................‡ -1917

†† Monthend estimated elevation, in feet, at 2400.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW¼NW¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi upstream from Red Creek, 1.7 mi downstream from Mud Mountain Dam, 3.8 mi east of Buckley, 7.4 mi downstream from Clearwater River and at mile 27.9.

DRAINAGE AREA.--401 mi².

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year. Chemical analyses July 1981; water temperatures March 1971 to September 1972; sediment records November 1971 to November 1972.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage, and Dec. 9 1928, to Nov. 30, 1933, water-stage recorder at site 3.0 mi upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records excellent prior to March and poor thereafter. Flow regulated by Mud Mountain Lake (station 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion above station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--50 years (water years 1929-33, 1939-33), 1,449 ft³/s, 48.99 in/yr, 1,049,000 acre-ft/yr, adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 3,500 ft³/s; probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958; Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily, 59 ft³/s June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft, from floodmarks, at former site, discharge, 28,000 ft³/s, from rating curve extended above 3,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,450 ft³/s Dec. 4, elevation, 805.74 ft; minimum, 60 ft³/s Mar. 14, due to regulation; minimum daily, 380 ft³/s Dec. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	464	1080	775	624	869	1300	1640	1220	1290	1650	1390	1160
2	464	1180	785	644	1110	1280	1590	1270	2450	1790	1330	995
3	484	924	3260	708	834	1040	1450	1280	2980	1600	1250	860
4	451	851	6140	1270	792	725	1360	1280	2760	1510	1220	840
5	430	1020	3290	3970	756	1160	1290	1500	2150	1420	1180	760
6	427	1410	2580	4320	746	1010	1210	1690	1770	1270	1190	700
7	595	1370	2150	5140	778	988	1190	1660	1880	1010	1180	720
8	620	1080	1650	6690	669	1170	1070	1640	2060	960	1190	660
9	716	914	705	4370	425	1780	855	1690	2180	1050	1210	685
10	647	836	380	3420	1020	2520	1070	1670	2170	910	1190	765
11	600	763	1940	3020	911	2620	988	1600	2010	865	1200	1320
12	561	700	1410	2650	959	2230	994	1560	1810	970	1100	1150
13	528	666	1220	2060	999	2170	1350	1520	1610	1690	1070	910
14	510	728	1110	952	985	1450	976	1560	1590	3190	1070	830
15	502	637	1120	1730	973	1740	900	1710	1780	2390	1070	750
16	504	661	2010	1680	1010	1520	890	1740	1680	1820	990	695
17	561	1120	1930	1700	1340	1340	900	1690	1800	1250	930	655
18	510	1630	1550	1280	1790	1520	947	1630	1910	1130	895	675
19	461	1440	1370	933	1540	1190	1030	1570	1680	1070	860	775
20	439	1240	1240	1530	1370	1010	1190	1590	1730	1040	830	645
21	440	1130	1140	1090	1230	922	1360	1910	1160	1010	820	595
22	1240	1010	1060	1030	1250	916	1330	2180	1430	970	810	580
23	1400	881	971	1020	1530	825	1300	2300	1640	915	835	570
24	951	790	894	997	2000	765	1350	2600	1650	910	810	560
25	786	739	849	937	1930	800	1290	3020	1550	665	785	555
26	867	694	856	1020	1730	755	1230	3030	1390	1110	765	560
27	1020	706	747	1440	1520	710	1170	3080	1470	1470	755	595
28	987	810	723	1360	1080	501	1120	3280	1740	1350	785	550
29	1650	899	684	1190	---	1230	1110	3900	1780	1290	855	515
30	1390	805	664	1090	---	2070	1130	3970	1690	1270	1090	490
31	1090	---	644	826	---	2020	---	2950	---	1330	1080	---
TOTAL	22296	28714	45837	60691	32146	41277	35280	63290	54790	40875	31725	22120
MEAN	719	957	1479	1958	1148	1332	1176	2042	1826	1319	1023	737
MAX	1650	1630	6140	6690	2000	2620	1640	3970	2980	3190	1390	1320
MIN	427	637	380	624	425	501	855	1220	1160	665	755	490
AC-FT	44220	56950	90920	120400	63760	81870	69980	125500	108700	81080	62930	43880
MEAN†	720	938	1467	1968	1150	1324	1171	2093	1777	1315	1023	737
CFSM†	1.80	2.34	3.66	4.91	2.87	3.30	2.92	5.22	4.43	3.28	2.55	1.84
IN.†	2.07	2.61	4.22	5.66	2.99	3.81	3.26	6.02	4.94	3.78	2.94	2.05
AC-FT†	44250	55770	90230	121000	63870	81410	69680	128700	105700	80900	62890	43860

CAL YR 1982 TOTAL 574381 MEAN 1574 MAX 10900 MIN 380 AC-FT 1139000 MEAN† 1573 CFSM† 3.92 IN.† 53.26 AC-FT† 1139000
WTR YR 1983 TOTAL 479041 MEAN 1312 MAX 6690 MIN 380 AC-FT 950200 MEAN† 1310 CFSM† 3.27 IN.† 44.34 AC-FT† 948300

† Adjusted for change in contents in Mud Mountain Lake.

12099000 WHITE RIVER CANAL AT BUCKLEY, WA

LOCATION.--Lat 47°10'21", long 122°03'48", in SW¼SE¼ sec.32, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on right bank 0.3 mi downstream from Dingle Basin, and 1.7 mi northwest of Buckley.

PERIOD OF RECORD.--February 1913 to September 1938 (monthly runoff only, published in WSP 1316), October 1981 to current year. Records for September 1938 to September 1981 available in files of the Geological Survey. Records prior to October 1961, published as White River flume near Buckley, at site 3.5 mi upstream; several stilling basins between the two sites affect runoff.

GAGE.--Water-stage recorder. Altitude of gage is 655 ft, from topographic map.

REMARKS.--Records excellent except those below 100 ft^3/s, which are fair, and those below 3.0 ft^3/s, which are poor. Flow completely regulated at White River Diversion Dam about 4.0 mi upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,820 ft^3/s Jan. 8; gage height, 9.14 ft; no flow on all or part of Dec. 7-11, June 1, July 5-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	460	1030	742	633	359	1220	1550	1030	111	1700	1410	1130
2	454	1070	757	641	1130	1420	1470	848	1210	1750	1380	1050
3	476	980	1230	709	812	1130	1330	1100	1660	1670	1220	832
4	450	804	1440	1020	768	703	1210	804	1680	1560	1110	817
5	424	948	1000	1700	739	1050	1130	1120	1660	63	1080	753
6	416	1280	689	1700	724	1100	1060	1520	1690	.00	1100	691
7	531	1350	197	1770	763	1070	1030	1510	1720	.00	1130	712
8	588	1090	.00	1630	688	1190	945	1480	1720	.00	1190	657
9	656	889	.00	909	474	1600	628	1540	1720	.00	1240	674
10	626	809	.00	597	851	1730	832	1500	1720	.00	1220	758
11	578	741	405	502	933	1460	830	1370	1720	.00	1270	1310
12	474	683	1180	415	933	333	827	1310	1710	.00	1140	1140
13	512	651	1170	313	984	1010	1090	1260	1670	.00	1020	895
14	496	685	1090	267	975	741	927	1260	1620	.00	999	812
15	490	636	1080	1060	966	1310	744	1370	1730	.00	1010	741
16	488	637	1440	1100	993	1230	732	1320	1710	.00	972	664
17	529	941	1580	1160	1170	1160	744	1260	1720	.00	915	646
18	508	1540	1500	921	1700	1270	786	1290	1740	.00	879	674
19	460	1450	1330	698	1530	1140	856	1300	1700	.00	848	765
20	436	1210	1190	1430	1320	912	960	1350	1750	.00	817	637
21	433	1120	1090	1070	1210	879	948	1560	1270	.00	793	584
22	923	991	1010	987	1200	921	897	1640	1310	.00	799	573
23	1350	866	921	990	1420	874	812	1640	1640	.00	822	558
24	961	774	837	957	1770	830	1170	1660	1680	.00	799	549
25	774	718	794	912	1770	871	887	1740	1630	.00	778	547
26	815	681	806	951	1750	848	1070	1750	1430	.00	748	555
27	928	678	729	1280	1600	804	1010	1740	1460	80	736	591
28	995	745	720	1330	1210	641	957	1720	1660	1200	763	540
29	1300	844	688	1170	---	972	933	1010	1730	1210	812	506
30	1390	797	667	1070	---	1650	951	1000	1720	1190	1060	484
31	1080	---	652	492	---	1650	---	809	---	1260	1070	---
TOTAL	21001	27638	26934.00	30384	30742	33719	29366	41811	47491	11683.00	31130	21845
MEAN	677	921	869	980	1098	1088	979	1349	1583	377	1004	728
MAX	1390	1540	1580	1770	1770	1730	1550	1750	1750	1750	1410	1310
MIN	416	636	.00	267	359	333	628	804	111	.00	736	484
AC-FT	41660	54820	53420	60270	60980	66880	58250	82930	94200	23170	61750	43330

CAL YR 1982	TOTAL	318503.50	MEAN	873	MAX	1800	MIN	.00	AC-FT	631800
WTR YR 1983	TOTAL	353744.00	MEAN	969	MAX	1770	MIN	.00	AC-FT	701700

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE¼SE¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on right bank at upstream side of county road bridge, 1.0 mi northeast of Buckley, and at mile 0.1.

DRAINAGE AREA.--15.4 mi².

PERIOD OF RECORD.--March 1977 to September 1981, December 1981 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft, from topographic map.

REMARKS.--Records good. Flow partly regulated by millpond at mile 5.6. Diversions above station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft³/s during low-flow periods enters Boise Creek above millpond.

AVERAGE DISCHARGE.--5 years (1978-81, 83), 31.8 ft³/s, 23,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 681 ft³/s Jan. 24, Feb. 14, 1982, gage height, 3.45 ft; minimum, 1.7 ft³/s Sept. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 460 ft³/s Jan. 5, gage height, 2.91 ft; minimum, 6.9 ft³/s Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	19	27	16	24	34	50	14	14	25	18	33
2	7.8	15	28	20	21	31	66	14	14	37	16	21
3	15	15	94	31	19	27	51	14	12	26	16	14
4	11	25	127	135	18	24	42	13	11	22	15	15
5	9.4	33	76	318	18	26	37	19	11	19	14	13
6	11	42	73	200	23	28	32	29	9.6	17	14	12
7	17	30	48	165	25	27	30	27	8.9	17	13	13
8	14	23	39	306	20	62	30	38	8.9	23	12	12
9	18	19	33	149	20	100	30	43	8.9	22	12	17
10	14	16	29	106	26	83	29	35	28	17	12	22
11	12	14	25	81	30	66	25	29	25	14	23	30
12	10	14	34	64	25	54	23	25	22	41	19	20
13	9.6	14	56	47	37	47	22	21	16	146	16	17
14	8.8	12	46	41	33	37	19	24	14	124	14	14
15	8.5	11	44	39	32	31	18	30	17	76	13	13
16	9.3	14	63	37	33	27	17	24	14	53	12	13
17	11	49	50	33	41	25	16	21	19	41	12	12
18	8.4	47	43	30	36	23	16	25	28	32	12	25
19	7.8	45	46	42	31	21	14	21	27	27	11	19
20	7.6	47	42	32	28	20	15	20	62	24	11	14
21	9.9	37	34	28	25	19	19	19	43	24	11	12
22	14	28	31	28	26	25	17	17	35	20	10	11
23	11	23	27	33	43	20	16	14	41	19	9.8	11
24	9.5	21	24	26	81	19	19	14	35	18	10	11
25	9.1	19	23	25	65	26	16	13	28	38	10	10
26	14	16	32	28	56	24	16	13	27	41	10	9.6
27	12	18	23	61	46	21	16	12	23	30	10	13
28	31	19	20	45	37	24	14	12	19	39	11	10
29	63	25	19	35	---	50	14	11	18	26	12	9.4
30	30	23	18	30	---	73	14	11	19	23	18	9.1
31	23	---	17	25	---	68	---	12	---	20	11	---
TOTAL	444.1	733	1291	2256	919	1162	744	634	658.3	1101	407.8	455.1
MEAN	14.3	24.4	41.6	72.8	32.8	37.5	24.8	20.5	21.9	35.5	13.2	15.2
MAX	63	49	127	318	81	100	66	43	62	146	23	33
MIN	7.4	11	17	16	18	19	14	11	8.9	14	9.8	9.1
AC-FT	881	1450	2560	4470	1820	2300	1480	1260	1310	2180	809	903

CAL YR 1982 TOTAL 12484.6 MEAN 34.2 MAX 445 MIN 5.0 AC-FT 24760
WTR YR 1983 TOTAL 10805.3 MEAN 29.6 MAX 318 MIN 7.4 AC-FT 21430

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE¼SE¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 150 ft downstream from railway bridge, 200 ft downstream from Boise Creek, 1.0 mi northeast of Buckley, and at mile 23.3

DRAINAGE AREA.--427 mi².

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to current year. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 620 ft, from topographic map. June 8, 1910, to Nov. 30, 1911, nonrecording gage at site 150 ft upstream at different datum, and Jan. 18, 1913, to Sept. 30, 1938, water-stage recorder at site 100 ft upstream at National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power and Light Co.).

REMARKS.--Records good. Since November 1911, White River Canal (station 12099000) has diverted from left bank 1.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 19.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft³/s Dec. 18, 1917, during period of combined flows; minimum, not determined. River, excluding canal, since April 1977, maximum discharge, 14,300 ft³/s Dec. 2, 1977, gage height, 9.11 ft; minimum, 25 ft³/s Nov. 19, 1979, gage height, 2.41 ft; minimum daily, 31 ft³/s July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,380 ft³/s Jan. 8, gage height, 7.08 ft; minimum, 38 ft³/s Aug. 31, gage height, 2.41 ft; minimum daily 49 ft³/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	67	69	49	327	98	117	89	1050	116	131	104
2	58	63	68	52	130	76	117	354	1410	206	122	83
3	63	62	256	62	108	70	108	84	1680	99	120	93
4	60	64	3700	296	100	185	98	420	1440	140	119	88
5	57	71	2560	2370	95	155	93	244	820	1100	114	72
6	58	85	1980	2900	95	70	86	100	260	1340	111	72
7	72	81	2050	3290	97	72	84	95	296	1080	109	72
8	66	72	1700	5590	89	102	86	104	470	1030	107	67
9	69	69	993	4030	91	446	102	121	609	1120	102	77
10	63	67	405	3090	104	1260	91	106	637	977	91	79
11	62	65	740	2770	100	1380	81	98	494	930	89	90
12	67	63	372	2410	95	1870	81	93	264	1060	79	75
13	61	63	108	1840	100	990	83	89	97	1890	78	81
14	58	61	98	860	108	536	78	91	75	3360	92	79
15	58	58	93	780	108	202	79	100	158	2520	80	74
16	59	58	615	644	110	185	79	91	117	1920	74	92
17	63	68	464	609	112	173	78	87	112	1340	76	73
18	59	96	137	381	188	182	76	93	220	1210	77	78
19	58	94	117	224	130	164	78	89	164	1150	71	79
20	56	87	108	126	110	155	145	89	158	1110	73	73
21	58	83	98	93	100	140	354	206	100	1070	69	73
22	69	76	95	89	97	130	385	405	146	1040	69	70
23	83	72	89	93	109	126	425	567	135	985	74	72
24	53	69	86	86	280	123	89	772	119	980	69	71
25	53	67	86	84	385	132	358	878	93	755	69	68
26	59	66	97	87	161	128	84	990	75	1200	76	67
27	60	65	67	152	93	126	83	1010	78	723	78	68
28	65	66	53	147	84	108	83	1140	158	217	85	67
29	135	74	52	132	---	115	83	2410	183	137	103	66
30	95	69	53	121	---	248	84	2810	142	132	102	66
31	70	---	51	440	---	288	---	2410	---	131	69	---
TOTAL	2025	2121	17460	33897	3705	10035	3868	16235	11760	31068	2778	2289
MEAN	65.3	70.7	563	1093	132	324	129	524	392	1002	89.6	76.3
MAX	135	96	3700	5590	385	1870	425	2810	1680	3360	131	104
MIN	53	58	51	49	84	70	76	84	75	99	69	66
AC-FT	4020	4210	34630	67230	7350	19900	7670	32200	23330	61620	5510	4540

CAL YR 1982	TOTAL	260319	MEAN	713	MAX	8730	MIN	51	AC-FT	516300
WTR YR 1983	TOTAL	137241	MEAN	376	MAX	5590	MIN	49	AC-FT	272200

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE¼NE¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi east of Dieringer, and 3.5 mi northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 0.7 ft National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power & Light Co.).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959, put into use Oct. 1, 1958), 46,600 acre-ft between gage heights of 515 ft, normal minimum pool, and 543 ft, normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the White River powerplant at Dieringer.

COOPERATION.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft June 30, 1958, gage height, 541.57 ft, capacity table dated Jan. 19, 1920; maximum gage height observed, 543.04 ft June 19, 1967; minimum contents observed, not determined (below normal minimum pool) Apr. 3, 1978, gage height, 514.90 ft; minimum gage height, 505.70 ft June 24, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 46,655 acre-ft July 4, gage height, 543.00 ft; minimum observed, 4,758 acre-ft March 29 and April 7, gage height, 519.82 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	542.37	45,068	--
Oct. 31	542.25	44,767	-301
Nov. 30	542.31	44,917	+150
Dec. 31	536.29	30,853	-14,064
CAL YR 1982	--	--	-15,047
Jan. 31	530.38	19,231	-11,622
Feb. 28	534.45	26,944	+7,713
Mar. 31	521.91	7,026	-19,918
Apr. 30	522.82	8,048	+1,022
May 31	542.28	44,842	+36,794
June 30	542.35	45,018	+176
July 31	542.32	44,942	-76
Aug. 31	542.33	44,968	+26
Sept. 30	542.31	44,917	-51
WTR YR 1983	--	--	-151

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW¼NW¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft downstream from White River powerplant at Dieringer, and 1,400 ft upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft, from topographic map.

REMARKS.--Records excellent. Flow regulated by White River powerplant.

AVERAGE DISCHARGE.--25 years, 973 ft³/s, 704,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s Jan. 29, 1965, gage height, 6.23 ft; maximum gage height, 6.72 ft Dec. 3, 1977 (backwater from White River); minimum discharge, 7.2 ft³/s Sept. 29, 1967, gage height, 0.20 ft; minimum daily discharge, 10 ft³/s Aug. 21, 22, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft³/s June 10, gage height, 5.40 ft; minimum, 12 ft³/s on all or part of May 17, July 5-14, gage height 0.43 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	490	1000	630	1600	1110	1110	1420	940	91	1670	1340	1130
2	451	1020	752	1600	1200	1790	1560	1100	1170	1530	1460	1150
3	454	981	1240	1600	1030	1620	1560	1380	1640	1410	1240	900
4	455	703	1600	1600	820	1780	1540	875	1740	1310	1140	845
5	424	906	1190	1600	712	1520	1500	895	1740	180	1090	830
6	398	1250	845	1610	748	1540	1460	920	1760	12	1020	748
7	403	1390	466	1610	752	1580	1270	1120	1670	12	1090	728
8	409	1110	264	1630	890	1370	915	1050	1750	12	1170	668
9	578	904	216	1610	1060	1460	668	883	1750	12	1290	624
10	623	774	216	1610	1010	1610	830	855	1980	13	1250	724
11	621	688	267	1610	970	1880	920	368	1820	13	1330	1240
12	546	661	399	1600	692	1800	785	441	1750	13	1380	1270
13	474	655	910	1360	600	1780	940	592	1740	13	1310	980
14	479	651	1240	1580	740	1800	940	580	1690	13	1020	855
15	480	724	1230	1580	855	1450	684	427	1670	13	990	748
16	480	497	1520	1580	1260	1490	648	850	1690	14	985	652
17	480	746	1640	1570	1400	1450	469	469	1690	14	940	652
18	480	1550	1640	1570	1610	1490	780	500	1850	14	815	632
19	484	1590	1470	1570	1510	1510	17	343	1910	15	820	724
20	466	1270	1370	1570	1370	1480	255	216	1730	15	815	668
21	466	1180	1190	1570	1070	1390	632	13	1440	15	795	469
22	616	1160	1600	1560	870	1360	1280	13	1210	15	785	604
23	1480	935	1450	704	870	1340	1350	13	1700	15	800	592
24	1040	805	1580	201	1170	1380	1030	520	1750	15	770	469
25	737	756	1580	17	1450	1270	1070	805	1790	6	760	580
26	814	684	1610	16	920	1130	1270	1040	1550	16	744	572
27	961	684	1600	756	410	965	1230	1580	1490	815	708	572
28	1100	684	1600	1240	760	1210	1140	1700	1690	1420	748	552
29	1270	748	1570	985	---	1150	1080	905	1750	1220	810	462
30	1440	885	1600	139	---	1220	815	900	1760	1120	970	552
31	1140	---	1600	420	---	1250	---	780	---	1170	1160	---
TOTAL	20739	27591	36285	39268	27859	45275	30058	23073	48961	12135	31545	22192
MEAN	669	920	1170	1267	995	1460	1002	744	1632	391	1018	740
MAX	1480	1590	1640	1630	1610	1880	1560	1700	1980	1670	1460	1270
MIN	398	497	216	16	410	965	17	13	91	12	708	462
AC-FT	41140	54730	71970	77890	55260	89800	59620	45770	97110	24070	62570	44020

CAL YR 1982	TOTAL	336904	MEAN	923	MAX	2140	MIN	13	AC-FT	668200
WTR YR 1983	TOTAL	364981	MEAN	1000	MAX	1980	MIN	12	AC-FT	723900

12101500 PUYALLUP RIVER AT PUYALLUP, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°12'31", long 122°19'33", in SE¼NW¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on left bank 0.8 mi upstream from bridge at Clark Creek, 2.0 mi northwest of Puyallup City Hall, and at mile 6.6.

DRAINAGE AREA.--948 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi upstream and 900 ft upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft upstream at datum 9.61 ft higher.

REMARKS.--Water-discharge records good. All diverted water returned to river above gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (station 12101000). Flood flow regulated by Mud Mountain Lake (station 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt above station.

Since 1912 the city of Tacoma pipeline diversion from Green River has released as much as 123 ft³/s daily, and since 1957 an average of about 21 ft³/s per month into Puyallup River 0.5 mi east of McMillin. Monthly mean discharge, in cubic feet per second, for the year is as follows:

October	4.53	January	5.77	April	9.56	July	6.88
November	7.10	February	2.15	May	0.34	August	2.51
December	63.86	March	3.12	June	5.06	September	2.49

AVERAGE DISCHARGE.--69 years, 3,367 ft³/s, 2,439,000 acre-ft/yr, adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Dec. 10, 1933, elevation, 31.0 ft, present datum; minimum, 306 ft³/s Sept. 25, 1955, elevation, 8.23 ft; minimum daily, 400 ft³/s Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,600 ft³/s Dec. 4, elevation, 19.56 ft; minimum, 787 ft³/s Sept. 30, elevation, 8.89 ft; minimum daily, 1,080 ft³/s Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1180	2510	2070	2930	3010	2360	3510	2000	3380	3620	3590	3160
2	1160	2290	1960	2990	2700	3060	3570	2330	4000	4170	3480	3010
3	1280	2200	6760	3240	2280	2770	3440	2570	4940	3800	3000	2400
4	1180	1890	15600	3920	2000	2920	3190	2190	4690	3350	2710	2260
5	1100	2310	8200	11100	1780	2860	3010	2310	4100	3280	2640	2040
6	1080	3040	5830	12300	1840	2670	2870	2410	3380	3430	2580	1830
7	1450	2930	4160	12500	1980	2750	2680	2570	3290	3390	2860	1860
8	1510	2450	2660	16600	1930	2840	2280	2720	3660	3260	3130	1670
9	1910	2090	2990	12500	2190	4130	1930	2750	3810	3260	3250	1640
10	1860	1830	2110	9980	2160	5610	2100	2660	4570	2840	3170	1920
11	1740	1650	2750	8270	2350	5430	2130	1950	4480	2760	3170	3720
12	1620	1560	2590	6550	2260	6010	1900	1890	4160	3800	2980	3080
13	1420	1530	2810	5370	2310	4820	2010	1960	3520	8590	2810	2510
14	1370	1490	3140	4880	2430	4340	2010	1960	3240	12300	2510	2260
15	1350	1530	3210	3830	2370	3300	1680	2040	3530	8270	2510	1950
16	1330	1350	4840	3730	2870	3090	1660	2440	3470	5950	2360	1790
17	1420	2300	5430	3720	3010	3010	1310	1940	3510	4530	2290	1680
18	1340	3640	4670	3570	3870	2920	1860	1970	4230	4140	2150	1670
19	1260	3390	4210	3810	3260	2870	1080	1830	4380	3840	2100	1830
20	1190	2920	3990	3570	3010	2840	1280	1680	4440	3810	1990	1590
21	1220	2610	3640	3350	2350	2670	2150	1680	3720	3650	1910	1290
22	2170	2390	3810	3280	2400	2830	2750	1910	2940	3520	1970	1430
23	3290	2050	3470	2560	2740	2630	2900	2120	3740	3590	2020	1440
24	2390	1820	3420	1950	4000	2630	2500	2890	3920	3720	1990	1340
25	1810	1700	3350	1480	4350	2610	2430	3440	3660	3240	1950	1440
26	1990	1580	3430	1510	3110	2620	2490	3800	3310	3760	1860	1470
27	2130	1640	3240	3030	2140	2170	2290	4320	3200	4000	1800	1590
28	2360	2010	3140	3700	2260	2450	2170	4530	3250	3650	1950	1410
29	4530	2170	3040	3000	---	2620	2070	5380	3490	3140	2140	1220
30	3620	2240	3010	1880	---	4160	1940	6210	3680	2930	2900	1270
31	2680	---	2980	2150	---	4170	---	5720	---	3170	2720	---
TOTAL	55940	65110	126510	163250	72960	102160	69190	86170	113690	130760	78490	57770
MEAN	1805	2170	4081	5266	2606	3295	2306	2780	3790	4218	2532	1926
MAX	4530	3640	15600	16600	4350	6010	3570	6210	4940	12300	3590	3720
MIN	1080	1350	1960	1480	1780	2170	1080	1680	2940	2760	1800	1220
AC-FT	111000	129100	250900	323800	144700	202600	137200	170900	225500	259400	155700	114600

CAL YR 1982 TOTAL 1293150 MEAN 3543 MAX 23100 MIN 1080 AC-FT 2565000
WTR YR 1983 TOTAL 1122000 MEAN 3074 MAX 16600 MIN 1080 AC-FT 2225000

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at Clark Creek bridge 0.8 mi (1.3 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-68, 1971-72, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1959 to September 1961, August 1965 to September 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)
OCT , 1982												
26...	0945	2050	75	6.8	11.0	8.6	10.1	92	210	370	27	0
FEB , 1983												
14...	1130	2890	75	E7.7	6.0	3.3	12.7	101	450	K500	27	0
MAY												
25...	1415	3740	55	7.4	15.0	4.4	10.6	106	K180	K150	21	2
AUG												
08...	1215	3210	42	8.0	15.5	200	9.4	94	K700	K180	18	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT , 1982												
26...	7.6	1.9	3.9	23	.3	.90	28	9.5	1.9	<.10	15	49
FEB , 1983												
14...	7.5	2.1	3.8	22	.3	1.1	29	8.3	13	<.10	16	67
MAY												
25...	5.9	1.4	3.0	23	.3	.80	19	6.0	4.1	<.10	13	47
AUG												
08...	4.8	1.4	2.7	24	.3	.70	20	5.9	1.3	<.10	11	41

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
OCT , 1982											
26...	58	.07	271	20	<.10	.130	1.2	.060	.030	.010	80
FEB , 1983											
14...	70	.09	523	14	.36	.110	.60	.080	.050	.030	30
MAY											
25...	46	.06	475	38	<.10	.080	.60	.090	.010	.010	40
AUG											
08...	40	.06	355	484	<.10	.060	5.6	.290	.060	.020	130

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
OCT , 1982											
25...	1	8	<.5	3	<1	<3	5	78	2	6	17
FEB , 1983											
14...	1	11	<.5	<1	<1	<3	6	140	<1	6	23
MAY											
25...	1	8	<.5	<1	<1	<3	3	54	<1	<4	11
AUG											
08...	<1	8	<.5	<1	<1	<3	3	76	3	8	11

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1982											
26...	<.1	<10	1	<1	1	38	<6	10	58	321	36
FEB , 1983											
14...	.2	<10	1	<1	<1	42	<6	18	120	936	15
MAY											
25...	<.1	<10	1	<1	<1	26	<6	9	56	565	--
AUG											
08...	<.1	<10	3	<1	<1	26	<6	5	408	3540	85

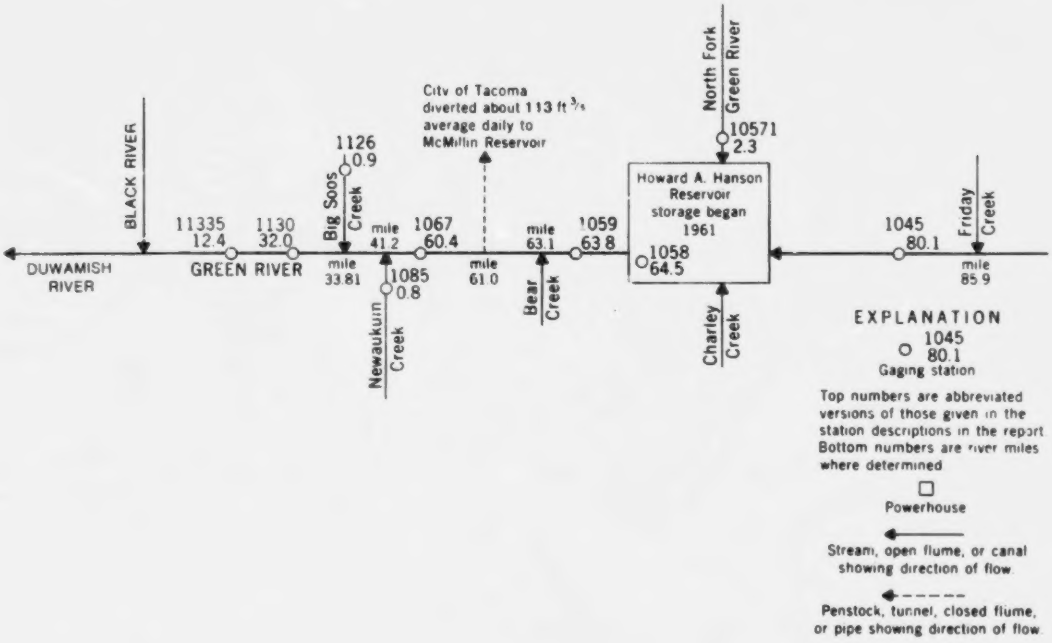
City of Tacoma
diverted about 113 ft³/s
average daily to
McMillin Reservoir
North Fork
Green River
10571
2.3
BLACK RIVER
1126
0.9
Big Soos
Creek
11335
12.4
1130
32.0
mile
41.2
1067
60.4
mile
63.1
1059
63.8
Howard A. Hanson
Reservoir
storage began
1961
1058
64.5
1045
80.1
Friday
Creek
DUWAMISH
RIVER
GREEN RIVER
mile
33.81
1085
0.8
mile
61.0
Bear
Creek
Charley
Creek
mile
85.9
Newaukum
Creek
EXPLANATION
1045
80.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 12.—Gaging stations in Duwamish River basin.

12104500 GREEN RIVER NEAR LESTER, WA

LOCATION.--Lat 47°12'28", long 121°33'07", in NE¼SE¼ sec.20, T.20 N., R.10 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi upstream from Champion Creek, 1.2 mi downstream from McCain Creek, 2.9 mi west of Lester, and at mile 80.1.

DRAINAGE AREA.--96.2 mi^2.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1947(M). WSP 1316: 1948(M). WSP 1932: 1960, drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft, from river-profile map. Prior to Nov. 22, 1959, water-stage recorder at site 300 ft upstream at different datum (gage destroyed by flood of Nov. 22, 1959), Dec. 28, 1959, to Sept. 21, 1960, nonrecording gage at site 400 ft downstream at different datum.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 14-20 and Dec. 14 to Jan. 31, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years, 391 ft^3/s, 55.20 in/yr, 283,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft^3/s Nov. 22, 1959, gage height, 12.41 ft, from floodmarks, present site and datum, on basis of slope-area measurement of peak flow; minimum, 22 ft^3/s Nov. 20, 1952, Sept. 27, 1967, part or all of each day Oct. 18-20, 23-27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 4	0230	2,390	4.43	Jan. 8	unknown	*4,050	*5.22

Minimum discharge, 57 ft^3/s Aug. 26, gage height, 1.34 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	308	138	126	227	373	574	404	301	121	108	88
2	64	288	144	128	217	354	500	420	269	129	105	80
3	80	249	1000	133	204	345	442	420	244	118	101	71
4	73	232	1790	250	192	359	394	399	220	112	97	66
5	67	301	904	1430	181	359	369	425	201	110	94	62
6	67	500	614	1350	175	354	349	482	186	106	91	60
7	108	382	465	2400	169	369	349	500	181	104	89	63
8	127	314	378	2700	161	453	335	471	175	103	86	60
9	148	263	326	1370	153	829	313	436	172	99	84	70
10	141	229	288	1900	156	1040	292	394	186	95	87	119
11	132	203	258	1450	186	921	273	369	172	92	92	203
12	121	187	240	900	192	750	251	354	158	103	88	144
13	110	175	230	700	211	648	237	349	146	192	81	121
14	103	160	217	560	227	581	223	359	138	265	77	109
15	97	147	260	480	227	506	223	364	138	512	74	99
16	93	150	380	410	230	442	237	335	129	388	72	93
17	106	290	360	360	373	399	273	318	129	305	70	89
18	101	350	315	330	627	364	331	331	141	251	69	107
19	92	340	285	320	506	335	415	340	136	217	67	119
20	88	330	260	300	442	318	500	373	161	195	66	103
21	85	273	235	280	409	301	549	459	151	175	64	95
22	92	237	215	255	409	305	524	477	143	158	63	90
23	100	211	198	260	537	318	471	471	141	146	63	86
24	94	192	180	245	735	305	512	465	132	138	63	83
25	91	175	172	250	697	292	448	459	127	136	61	80
26	110	164	165	270	574	281	388	425	127	141	60	78
27	127	156	157	310	488	269	345	388	121	132	61	77
28	164	151	150	305	420	258	326	394	114	134	63	75
29	339	148	143	280	---	453	335	420	112	124	62	72
30	279	141	138	260	---	821	359	399	114	117	73	71
31	245	---	123	240	---	712	---	345	---	113	64	---
TOTAL	3708	7246	10728	20552	9325	14414	11137	12545	4865	5131	2395	2733
MEAN	120	242	346	663	333	465	371	405	162	166	77.3	91.1
MAX	339	500	1790	2700	735	1040	574	500	301	512	108	203
MIN	64	141	123	126	153	258	223	318	112	92	60	60
CFSM	1.25	2.52	3.60	6.89	3.46	4.83	3.86	4.21	1.68	1.73	.80	.95
IN.	1.43	2.80	4.15	7.95	3.61	5.57	4.31	4.85	1.88	1.98	.93	1.06
AC-FT	7350	14370	21280	40760	18500	28590	22090	24880	9650	10180	4750	5420

CAL YR 1982 TOTAL 143723 MEAN 394 MAX 3570 MIN 43 CFSM 4.10 IN. 55.58 AC-FT 285100
WTR YR 1983 TOTAL 104779 MEAN 287 MAX 2700 MIN 60 CFSM 2.98 IN. 40.52 AC-FT 207800

12105710 NORTH FORK GREEN RIVER NEAR LEMOLO, WA

LOCATION.--Lat 47°18'21", long 121°46'20", near line between SW¼ and SE¼ sec.15, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on left bank 1.8 mi northeast of Lemolo siding, 5.5 mi east of Palmer, and at mile 2.3.

DRAINAGE AREA.--16.7 mi².

PERIOD OF RECORD.--June 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 1,250 ft (381 m), from topographic map.

REMARKS.--Records good. An undetermined amount of water goes underground a short distance above the gage and, at times during dry summers, the streambed at the gage may become completely dry. Streamflow diverted by withdrawal from nearby wells, by the city of Tacoma Water Department, affects low flows.

AVERAGE DISCHARGE.--18 years, 86.6 ft³/s, 70.42 in/yr, 62,740 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s Dec. 2, 1975, gage height, 8.29 ft; no flow Aug. 8, 9, 18, Sept. 5-13, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 28, 1965, reached a stage of 9.50 ft from floodmarks, discharge, 2,370 ft³/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1900	920	5.52	Jan. 3	0300	*980	*5.64
Jan. 5	1500	855	5.39	Jan. 10	1000	688	5.05

Minimum discharge, 14 ft³/s Aug. 26, 27, gage height, 2.51 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	90	66	39	53	79	129	53	27	48	45	34
2	21	70	72	39	50	75	126	53	27	74	42	43
3	34	60	692	41	46	70	116	57	26	56	39	27
4	26	78	535	129	44	66	107	50	23	48	36	23
5	23	106	268	616	41	64	101	64	22	43	34	22
6	29	128	185	516	41	65	92	98	21	41	31	20
7	53	103	136	735	41	68	87	82	19	40	29	24
8	46	86	114	773	38	133	80	76	17	38	27	20
9	52	73	99	417	37	214	75	83	17	37	26	28
10	42	64	87	613	41	189	71	82	35	32	25	71
11	36	55	78	425	59	153	67	73	34	29	38	99
12	32	51	82	275	58	131	62	67	26	62	34	67
13	28	47	94	211	64	118	58	62	23	169	26	53
14	26	42	100	177	69	101	54	59	20	167	23	49
15	24	39	123	153	67	91	53	69	28	299	22	41
16	25	46	178	131	80	79	52	63	24	169	21	40
17	34	133	154	121	117	71	52	57	26	128	20	36
18	28	132	128	112	119	66	54	61	46	114	19	56
19	25	118	114	112	104	60	56	56	50	94	18	53
20	22	112	101	102	110	57	61	55	102	96	17	43
21	24	95	92	90	98	54	66	55	79	87	17	38
22	36	81	83	83	103	53	56	50	64	74	16	35
23	34	69	75	83	142	57	54	48	64	66	15	32
24	28	61	68	78	154	51	60	44	57	62	16	30
25	25	55	64	77	129	49	50	41	49	72	16	28
26	42	50	61	80	115	48	49	38	49	85	14	28
27	42	49	55	95	100	46	45	35	43	68	14	31
28	65	64	51	91	88	50	44	32	39	67	15	27
29	143	61	47	79	---	186	45	30	36	59	18	25
30	91	65	45	66	---	194	45	28	37	53	21	23
31	81	---	42	59	---	153	---	27	---	48	17	---
TOTAL	1238	2283	4089	6618	2208	2897	2069	1748	1130	2525	751	1146
MEAN	39.9	76.1	132	213	78.9	93.5	69.0	56.4	37.7	81.5	24.2	38.2
MAX	143	133	692	773	154	214	129	98	102	299	45	99
MIN	21	39	42	39	37	46	44	27	17	29	14	20
CFSM	2.39	4.56	7.90	12.8	4.72	5.60	4.13	3.38	2.26	4.88	1.45	2.29
IN.	2.76	5.09	9.11	14.74	4.92	6.45	4.61	3.89	2.52	5.62	1.67	2.55
AC-FT	2460	4530	8110	13130	4380	5750	4100	3470	2240	5010	1490	2270

CAL YR 1982 TOTAL 33499.6 MEAN 91.8 MAX 947 MIN 4.8 CFSM 5.50 IN. 74.62 AC-FT 66450
WTR YR 1983 TOTAL 28702 MEAN 78.6 MAX 773 MIN 14 CFSM 4.71 IN. 63.93 AC-FT 56930

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure, just upstream from Howard A. Hanson Dam on Green River, 1.4 mi upstream from Bear Creek, 5.1 mi southeast of Palmer, and at mile 64.5.

DRAINAGE AREA.--220 mi², approximately.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity, 105,650 acre-ft between elevations 1,035 ft, invert of outlet tunnel, and 1,206 ft, top of spillway gates. Storage is not retained but is dissipated as soon after a flood as possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Record of reservoir elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 61,325 acre-ft Dec. 5, 1975, elevation, 1,175.8 ft; minimum observed, 34 acre-ft Nov. 2, 1962, elevation, 1,037.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 26,120 acre-ft June 21, elevation, 1,141.6 ft; minimum observed, 153 acre-ft Jan. 27, elevation, 1,045.0 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on photogrametric maps by Fairchild Aerial Surveys in 1961)

1,045	153	1,080	2,800	1,140	24,887
1,050	289	1,090	4,554	1,150	33,301
1,055	493	1,100	6,893	1,160	43,092
1,060	770	1,110	9,715	1,170	54,326
1,065	1,132	1,120	13,386	1,180	66,591
1,070	1,588	1,130	18,362		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0900

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16887	9969	1955	1225	903	1166	1242	1330	24887	24963	23722	21419
2	16366	9224	1943	1303	789	1208	1108	1588	25573	25192	23508	21484
3	15909	9044	2992	1394	751	1124	1182	2252	25806	25344	23437	21419
4	15608	9103	3842	1330	783	1067	1489	2858	25884	25497	23437	21291
5	15118	9133	1051	2744	939	1233	1376	3420	25884	25497	23299	21099
6	14549	10196	1460	4767	983	1358	1157	4227	25884	25268	23161	21034
7	14271	11331	1174	5347	1021	1413	903	5438	25806	25039	23022	20906
8	14181	11812	1028	9715	822	1157	1083	6592	25727	24887	22884	20715
9	14136	10426	828	8458	809	1777	1303	7625	25573	24887	22884	20590
10	14136	9684	822	4451	796	1854	1403	8661	25573	24740	22815	20465
11	14046	9406	975	2873	998	1149	1385	9561	25649	24666	22746	20970
12	13866	8955	953	1943	1166	1260	1067	10196	25497	24740	22815	21877
13	13604	7047	961	1432	1376	1036	1005	10835	25420	25192	22746	21943
14	13302	5531	876	1174	1691	939	1036	11403	25268	25344	22746	21812
15	12923	4147	1312	1568	1451	828	1036	12317	25268	25344	22746	21615
16	12436	3973	1798	1548	1199	910	1208	12719	25344	24887	22746	21355
17	12158	4207	1798	1251	1036	745	1376	13217	25344	23651	22746	20402
18	11626	4388	1876	1100	1691	903	1578	13647	25420	22074	22679	19360
19	11331	3917	1755	1075	1955	1422	1932	14136	25420	22410	22612	18710
20	10696	3626	1451	961	1755	1755	1798	14549	25884	23161	22544	18362
21	10426	3556	1116	1059	1588	1932	1286	15214	26120	23580	22477	18081
22	10228	3505	961	1199	1349	1734	1166	15909	25963	23722	22343	17746
23	9905	3193	869	1268	1268	1578	968	16676	25806	23936	22276	17420
24	9561	2800	946	1233	1358	1442	809	17529	25727	24007	22208	17045
25	9164	2673	917	961	896	1286	783	18478	25649	24079	22074	16676
26	9194	2404	862	835	1140	1233	903	19539	25573	24297	22008	16263
27	8984	2497	751	153	998	1132	1036	20590	25497	24150	21877	16161
28	8458	2252	990	684	632	1028	1036	21484	25268	24007	21812	16009
29	9530	2095	1021	932	---	1385	990	22410	25192	24007	21747	16009
30	10097	2083	1005	1005	---	2577	1140	23299	25039	24007	21681	16009
31	10065	---	1149	961	---	2577	---	24150	---	23865	21550	---
††	1110.9	1073.8	1065.8	1062.3	1062.7	1070.6	1066.5	1139.6	1140.1	1138.5	1135.1	1125.6
†	10000	2001	1199	925	953	1650	1260	24592	24963	23794	21484	16009
‡	-7045	-7999	-802	-274	+28	+697	-390	+23332	+371	-1169	-2310	-5475

CAL YR 1982.......................‡ +8
WTR YR 1983.......................‡ -1036

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.
NOTE.--Daily contents, in acre-feet, usually at 0900 hours.

12105900 GREEN RIVER BELOW HOWARD A. HANSON RESERVOIR, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi upstream from Bear Creek, 0.7 mi downstream from Howard A. Hanson Dam, 5.0 mi southeast of Palmer, and at mile 63.8.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 990 ft, from topographic map.

REMARKS.--Records excellent. Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--23 years, 1,029 ft³/s, 63.23 in/yr, 745,500 acre-ft/yr, adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Feb. 21, 1961, gage height, 14.40 ft; minimum, 87 ft³/s Dec. 29, 1961, gage height, 3.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft³/s Dec. 4, gage height, 13.93 ft; minimum, 232 ft³/s May 26-28, gage height, 4.29 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	481	1070	579	376	722	909	1790	672	240	402	458	311
2	478	990	598	381	668	944	1440	578	348	381	408	311
3	478	706	3030	457	602	927	1230	521	433	381	378	311
4	495	706	6760	823	533	813	1160	514	417	382	378	310
5	502	774	2610	2960	516	797	1180	525	417	447	378	310
6	502	788	1430	4570	523	814	1120	490	417	498	377	310
7	499	801	1450	6280	579	965	965	461	417	453	377	309
8	499	1260	1180	7120	536	1210	842	481	417	404	340	308
9	499	1380	990	6870	497	2000	809	498	417	389	316	333
10	499	925	824	6050	496	2550	820	511	429	389	316	374
11	495	769	764	4810	551	2140	876	520	444	357	316	375
12	495	1300	760	3180	543	1750	788	510	444	364	305	444
13	492	1400	805	2390	566	1590	684	497	420	856	295	502
14	492	1180	970	1760	768	1350	630	504	371	1290	295	502
15	516	788	692	1480	895	1170	567	510	350	1580	271	502
16	530	506	644	1460	907	1080	542	514	329	1780	256	701
17	527	985	1230	1310	1010	928	557	518	346	1770	256	834
18	523	1530	1080	1110	1300	717	578	522	381	1100	256	829
19	520	1370	1070	1080	1410	621	817	524	382	425	256	700
20	450	1130	1020	963	1380	649	1170	499	490	416	256	490
21	405	1120	915	844	1340	769	1160	489	601	481	256	488
22	464	1030	798	821	1290	821	1070	493	600	466	256	487
23	499	920	678	831	1420	803	1020	445	576	443	255	485
24	492	778	631	887	1820	786	988	366	499	444	255	484
25	390	697	623	852	1640	731	868	276	463	455	255	482
26	420	651	612	856	1430	706	769	241	463	537	254	403
27	611	611	491	817	1370	691	711	232	462	507	254	349
28	516	603	450	746	976	675	708	233	440	506	254	283
29	671	583	467	762	---	1140	655	235	426	483	254	241
30	870	603	411	782	---	1970	646	237	425	459	289	241
31	870	---	371	756	---	2350	---	239	---	458	310	---
TOTAL	16180	27954	34933	64384	26288	35366	27160	13855	12864	19303	9380	13009
MEAN	522	932	1127	2077	939	1141	905	447	429	623	303	434
MAX	870	1530	6760	7120	1820	2550	1790	672	601	1780	458	834
MIN	390	506	371	376	496	621	542	232	240	357	254	241
AC-FT	32090	55450	69290	127700	52140	70150	53870	27480	25520	38290	18610	25800
MEAN†	407	798	1114	2072	940	1152	899	826	435	604	265	342
CFSM†	1.84	3.61	5.04	9.38	4.25	5.21	4.07	3.74	1.97	2.73	1.20	1.55
IN.†	2.12	4.03	5.81	10.81	4.43	6.01	4.54	4.31	2.20	3.15	1.38	1.72
AC-FT†	25040	47450	68490	127400	52170	70850	53480	50810	25890	37120	16300	20320

CAL YR 1982 TOTAL 386209 MEAN 1058 MAX 8200 MIN 234 AC-FT 766000 MEAN† 1058 CFSM† 4.79 IN.† 64.99 AC-FT† 766000
WTR YR 1983 TOTAL 300676 MEAN 824 MAX 7120 MIN 232 AC-FT 596400 MEAN† 822 CFSM† 3.72 IN.† 50.51 AC-FT† 595400

† Adjusted for change in contents in Howard A. Hanson Reservoir.

BEST COPY AVAILABLE

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at city of Tacoma purification plant, 0.6 mi downstream from diversion dam, 2 mi southeast of Palmer, and at mile 60.4.

DRAINAGE AREA.--231 mi².

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 859.53 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 4.1 mi upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 113 ft³/s above station for municipal supply. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--20 years, 999 ft³/s, 723,800 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s Feb. 12, 1981, gage height, 12.05 ft; minimum, 20 ft³/s part or all of each day Oct. 26, 27, Nov. 3, 6, 1974, gage height, 3.90 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft³/s, determined by slope-area measurement at site 0.6 mi downstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,600 ft³/s Dec. 4, gage height, 12.28 ft; minimum, 136 ft³/s Sept. 30, gage height, 5.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	984	535	310	696	892	1890	625	145	330	374	215
2	380	920	549	310	626	928	1430	525	246	314	326	217
3	386	647	3520	392	556	913	1260	458	350	310	288	217
4	395	640	7430	885	476	801	1140	450	332	305	285	214
5	404	724	2920	3710	446	766	1180	462	330	363	285	213
6	408	766	1450	5260	458	780	1120	449	330	422	285	209
7	416	773	1450	7030	514	906	968	418	330	377	285	209
8	416	1170	1170	7820	482	1140	829	447	330	324	250	209
9	416	1300	968	7160	434	2010	780	478	327	306	222	225
10	416	871	815	6280	434	2730	794	494	353	305	222	282
11	416	717	738	5030	488	2290	836	513	368	275	224	300
12	416	1180	738	3380	482	1740	780	478	363	309	213	358
13	408	1300	787	2440	514	1590	672	458	339	902	200	416
14	404	1100	976	1760	717	1310	594	458	287	1310	197	416
15	427	731	759	1410	871	1150	528	479	261	1500	175	416
16	449	440	654	1380	878	1080	495	482	244	1680	156	607
17	443	928	1260	1260	1000	906	508	482	265	1660	155	749
18	440	1490	1090	1070	1300	682	528	482	323	1060	152	750
19	430	1350	1060	1050	1370	570	759	482	320	366	152	632
20	368	1130	1020	944	1340	598	1120	452	452	342	162	404
21	320	1100	899	822	1290	710	1130	434	570	407	157	404
22	375	992	780	780	1240	787	1030	434	551	396	151	404
23	416	871	661	808	1360	766	978	386	522	363	149	404
24	415	745	598	850	1770	752	936	304	439	363	149	402
25	317	647	598	829	1630	696	834	202	398	379	149	398
26	331	605	584	850	1390	668	728	158	398	463	149	322
27	537	549	452	850	1350	654	666	145	392	434	149	260
28	474	542	392	801	992	640	675	145	368	434	149	195
29	654	521	416	752	---	1120	617	145	347	413	149	171
30	829	549	358	759	---	2020	592	145	347	379	183	138
31	815	---	310	731	---	2410	---	145	---	374	205	---
TOTAL	13701	26282	35937	67713	25104	35005	26397	12215	10627	17165	6347	10356
MEAN	442	876	1159	2184	897	1129	880	394	354	554	205	345
MAX	829	1490	7430	7820	1770	2730	1890	625	570	1680	374	750
MIN	317	440	310	310	434	570	495	145	145	275	149	138
AC-FT	27180	52130	71280	134300	49790	69430	52360	24230	21080	34050	12590	20540

CAL YR 1982 TOTAL 376695 MEAN 1032 MAX 6800 MIN 122 AC-FT 747200
WTR YR 1983 TOTAL 286849 MEAN 786 MAX 7820 MIN 138 AC-FT 569000

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi downstream from West Whitney Hill bridge, 0.8 mi upstream from mouth, and 3.5 mi southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi^2.

PERIOD OF RECORD.--July 1944 to November 1950, water years 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WDR WA-74-1: 1973(M). WDR WA-76-1: 1975.

GAGE.--Water-stage recorder. Elevation of gage is 310 ft, from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records good. Many small diversions upstream from station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--37 years (water years 1945-50, 1953-83), 61.4 ft^3/s, 30.43 in/yr, 44,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft^3/s probably Feb. 17, 1949, gage height, 3.54 ft from recorded range in stage, from rating curve extended above 600 ft^3/s; minimum, 8.0 ft^3/s Oct. 13, 14, 1952; minimum gage height, 0.62 ft Aug. 26, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 5	unknown	504	2.69	Mar. 8	2045	*516	*2.71
Feb. 24	1345	*516	*2.71				

Minimum discharge, 16 ft^3/s Oct. 1-3, 15, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	24	48	33	55	57	83	31	28	34	26	45
2	16	22	41	38	52	58	110	31	26	45	25	33
3	18	21	159	60	50	48	96	31	25	34	25	26
4	18	30	139	174	48	43	74	30	24	30	24	25
5	17	34	74	420	46	46	66	33	23	29	24	23
6	19	39	91	370	53	58	59	37	23	27	22	23
7	23	31	68	240	63	58	56	36	22	26	22	24
8	20	26	53	280	53	246	58	43	21	30	22	23
9	23	24	48	185	53	385	57	59	21	28	22	27
10	20	22	43	155	59	250	57	42	38	25	21	30
11	18	22	40	130	69	132	52	37	36	24	29	32
12	18	21	49	115	62	98	49	34	32	39	28	27
13	17	21	85	100	84	88	46	32	27	102	22	24
14	17	20	67	88	77	76	45	32	24	82	21	24
15	17	20	63	80	71	69	43	39	26	51	21	22
16	17	25	95	75	74	64	41	35	24	41	20	23
17	18	57	76	72	80	58	40	32	28	36	20	21
18	17	51	68	66	79	55	39	32	35	32	19	32
19	17	50	74	94	63	54	38	31	35	30	19	31
20	17	50	75	76	60	53	38	30	70	29	19	25
21	18	41	68	65	59	51	40	29	44	28	18	22
22	23	34	61	62	64	61	37	28	36	28	18	22
23	19	30	54	78	116	55	36	27	44	26	18	20
24	18	28	46	67	316	53	38	26	42	26	19	21
25	18	27	44	62	145	53	36	25	35	34	18	19
26	24	26	58	66	107	51	36	25	33	41	18	21
27	22	28	46	119	78	51	35	24	30	34	18	23
28	31	34	41	96	61	53	33	24	27	43	19	21
29	60	45	38	71	---	111	32	23	27	34	23	19
30	31	44	35	63	---	145	32	23	27	30	30	20
31	26	---	34	58	---	123	---	24	---	27	21	---
TOTAL	653	947	1981	3658	2197	2803	1502	985	933	1124	671	748
MEAN	21.1	31.6	63.9	118	78.5	90.4	50.1	31.8	31.1	36.3	21.6	24.9
MAX	60	57	159	420	316	385	110	59	70	102	30	45
MIN	16	20	34	33	46	43	32	23	21	24	18	19
CFSM	.77	1.15	2.33	4.31	2.86	3.30	1.83	1.16	1.14	1.32	.79	.91
IN.	.89	1.29	2.69	4.97	2.98	3.81	2.04	1.34	1.27	1.53	.91	1.02
AC-FT	1300	1880	3930	7260	4360	5560	2980	1950	1850	2230	1330	1480

CAL YR 1982 TOTAL 20404 MEAN 55.9 MAX 516 MIN 16 CFSM 2.04 IN. 27.70 AC-FT 40470
WTR YR 1983 TOTAL 18202 MEAN 49.9 MAX 420 MIN 16 CFSM 1.82 IN. 24.71 AC-FT 36100

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi upstream from fish hatchery, 2.7 mi east of Auburn, and at mile 0.9.

DRAINAGE AREA.--66.7 mi², excludes 3.67 mi² in vicinity of Youngs Lake (flow from which has been diverted to Cedar River since about 1935).

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft, from topographic map.

REMARKS.--Records good except those above 350 ft³/s and the period of no gage-height record July 31 to Sept. 12, which are fair. City of Seattle diverts probably less than 2 ft³/s from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966, fish hatchery 0.5 mi above station diverted up to 19 ft³/s which was returned below the station.

AVERAGE DISCHARGE.--17 years (water years 1967-83), 129 ft³/s, 26.26 in/yr, 93,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,090 ft³/s Feb. 28, 1972, gage height, 6.17 ft; minimum, 11 ft³/s Sept. 5, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 440 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0200	443	5.40	Jan. 5	1800	*934	*5.40

Minimum daily discharge, 28 ft³/s Aug. 21-23, 25-27, minimum gage height, 1.27 ft. Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	60	124	192	174	223	209	80	52	54	36	60
2	33	53	110	201	162	219	225	78	51	60	35	45
3	34	52	251	252	150	203	201	77	49	55	35	39
4	33	66	421	358	141	189	180	76	48	49	34	36
5	32	78	334	788	131	183	165	80	48	47	33	34
6	37	81	336	722	136	207	155	102	47	45	32	33
7	49	72	298	645	154	207	152	94	46	43	31	35
8	38	64	257	670	139	254	167	101	44	47	31	33
9	38	59	231	574	144	368	160	106	44	48	30	38
10	36	56	213	532	155	390	154	94	60	44	30	43
11	35	54	199	461	173	334	146	84	59	41	40	54
12	35	53	213	397	169	292	136	80	54	60	38	45
13	34	52	246	344	203	271	130	73	50	94	34	42
14	34	50	250	302	212	249	125	70	48	83	32	39
15	33	49	256	273	196	229	120	92	48	63	31	37
16	34	63	333	252	198	212	115	85	47	56	31	37
17	36	130	335	238	207	197	112	79	53	51	30	36
18	36	128	342	228	207	184	108	74	58	46	30	46
19	35	127	404	254	185	175	106	70	59	44	29	53
20	36	127	392	232	183	168	104	67	63	43	29	44
21	37	104	380	203	182	160	104	65	59	40	28	38
22	65	90	349	189	194	172	99	62	55	39	28	36
23	58	80	308	223	270	160	98	61	60	38	28	35
24	46	73	278	212	346	152	101	58	60	38	29	35
25	43	69	260	196	344	144	97	56	55	40	28	35
26	57	66	262	196	316	138	97	54	52	44	28	35
27	53	69	246	256	272	144	95	52	51	43	28	38
28	76	89	232	276	240	155	90	51	49	46	29	38
29	128	109	218	232	---	186	83	49	48	43	31	37
30	89	116	209	209	---	227	81	49	49	39	38	36
31	67	---	200	191	---	239	---	50	---	37	34	---
TOTAL	1431	2339	8487	10298	5583	6631	3915	2269	1566	1520	980	1192
MEAN	46.2	78.0	274	332	199	214	131	73.2	52.2	49.0	31.6	39.7
MAX	128	130	421	788	346	390	225	106	63	94	40	60
MIN	32	49	110	189	131	138	81	49	44	37	28	33
CFSM	.69	1.17	4.11	4.98	2.98	3.21	1.96	1.10	.78	.73	.47	.60
IN.	.80	1.30	4.73	5.74	3.11	3.70	2.18	1.27	.87	.85	.55	.66
AC-FT	2840	4640	16830	20430	11070	13150	7770	4500	3110	3010	1940	2360

CAL YR 1982 TOTAL 53558 MEAN 147 MAX 958 MIN 27 CFSM 2.20 IN. 29.87 AC-FT 106200
WTR YR 1983 TOTAL 46211 MEAN 127 MAX 788 MIN 28 CFSM 1.90 IN. 25.77 AC-FT 91660

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi east of Auburn, 1.8 mi downstream from Big Soos Creek, and at mile 32.0.

DRAINAGE AREA.--399 mi^2, excludes 3.67 mi^2 in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 32.5 mi above station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 113 ft^3/s from river at headworks near Palmer, 29 mi above station, for municipal use. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--47 years, 1,355 ft^3/s, 981,700 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft^3/s Nov. 23, 1959, elevation, 69.75 ft; minimum, 81 ft^3/s Sept. 23, 1952; minimum elevation, 53.15 ft Aug. 23-29, Sept. 1-3, 6-9, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,140 ft^3/s Jan. 8, elevation, 61.99 ft; minimum, 280 ft^3/s Sept. 30, elevation, 53.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	1050	865	639	1260	1470	2700	872	363	573	545	475
2	520	1190	806	650	1190	1530	2110	872	358	573	535	485
3	540	872	2150	758	1100	1480	2000	740	535	540	460	445
4	535	794	6680	1260	1020	1370	1690	728	535	520	450	430
5	551	935	4380	4000	942	1290	1700	722	530	515	445	415
6	573	991	2300	6100	949	1340	1630	776	525	611	435	405
7	589	977	2170	6960	998	1400	1520	710	525	595	430	405
8	573	1080	1730	8790	1010	1760	1360	734	515	562	420	400
9	589	1580	1500	8220	928	2760	1260	806	510	520	372	400
10	578	1150	1280	7160	942	3460	1260	782	589	505	363	450
11	567	900	1120	6270	1020	3240	1250	782	622	495	385	495
12	562	1100	1120	4420	1020	2510	1250	770	595	510	395	475
13	551	1530	1170	3450	1090	2380	1150	722	573	928	354	567
14	545	1280	1340	2820	1170	2040	1010	710	515	1740	340	562
15	551	1120	1410	2240	1420	1850	963	770	470	1710	336	556
16	584	668	1120	2180	1460	1660	858	758	460	1990	300	600
17	600	970	1860	2100	1500	1540	858	746	445	1960	296	865
18	584	1750	1670	1840	1820	1320	858	740	567	1720	296	914
19	578	1770	1710	1830	1980	1080	928	734	540	686	292	928
20	556	1470	1660	1720	1930	1080	1300	722	644	540	292	617
21	480	1390	1560	1500	1870	1120	1520	680	806	578	300	562
22	520	1290	1370	1410	1830	1260	1380	674	794	606	292	551
23	578	1130	1220	1470	2040	1230	1340	662	806	551	292	545
24	562	1030	1060	1460	2490	1190	1290	573	734	545	292	540
25	540	872	1030	1460	2710	1170	1240	485	639	562	288	535
26	435	830	1030	1470	2240	1120	1100	400	622	650	288	530
27	600	776	953	1660	2110	1100	977	372	617	639	304	430
28	764	788	758	1620	1810	1100	970	358	600	644	331	405
29	837	824	782	1440	---	1420	935	349	562	622	358	313
30	1040	818	758	1380	---	2540	858	340	556	567	410	304
31	998	---	650	1340	---	3000	---	349	---	551	410	---
TOTAL	18600	32925	49222	89617	41849	52810	39265	20438	17152	24308	11306	15604
MEAN	600	1098	1588	2891	1495	1704	1309	659	572	784	365	520
MAX	1040	1770	6680	8790	2710	3460	2700	872	806	1990	545	928
MIN	435	668	650	639	928	1080	858	340	358	495	288	304
AC-FT	36890	65310	97630	177800	83010	104700	77880	40540	34020	48210	22430	30950

CAL YR 1982	TOTAL	533948	MEAN	1463	MAX	10400	MIN	245	AC-FT	1059000
WTR YR 1983	TOTAL	413096	MEAN	1132	MAX	8790	MIN	288	AC-FT	819400

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1952 to current year.

INSTRUMENTATION.--Temperature recorder since March 1952.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C July 28, 1958; minimum, 0.0°C on Jan. 29, 30, 1980.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.0°C May 29; minimum, 2.0°C Dec. 30, 31, Jan. 1.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.5	11.5	13.0	9.5	8.0	9.0	6.5	5.5	6.0	3.0	2.0	2.5
2	14.5	13.0	13.5	8.5	7.5	8.0	6.0	5.5	6.0	3.5	3.0	3.5
3	14.0	12.5	13.0	9.0	8.0	8.5	7.0	6.0	7.0	4.0	3.5	3.5
4	14.0	11.5	12.5	9.5	8.5	9.0	6.5	5.5	6.0	4.5	3.5	4.0
5	13.5	10.5	12.0	8.5	8.0	8.5	5.5	5.0	5.5	5.0	4.0	4.5
6	13.0	12.0	12.5	8.0	7.5	8.0	5.5	5.0	5.5	4.5	4.0	4.5
7	13.0	11.0	12.0	8.0	7.0	7.5	4.5	4.0	4.5	5.5	4.5	5.0
8	12.5	11.0	12.0	7.5	6.5	7.0	4.0	3.5	3.5	5.5	5.0	5.5
9	14.0	12.0	13.0	6.5	6.0	6.5	4.0	3.5	3.5	5.5	5.0	5.0
10	13.0	11.5	12.0	6.0	5.0	6.0	3.5	3.0	3.5	6.0	5.5	6.0
11	13.5	11.5	12.0	6.0	5.0	5.5	4.0	3.0	3.5	6.0	5.5	6.0
12	12.5	11.0	12.0	5.5	5.0	5.0	5.0	4.0	4.5	5.5	5.0	5.0
13	13.0	11.0	12.0	6.0	5.0	5.5	5.0	4.5	5.0	5.5	5.0	5.5
14	13.0	11.0	12.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0
15	12.5	11.0	11.5	6.0	4.5	5.0	5.5	5.0	5.0	5.0	5.0	5.0
16	12.5	12.0	12.0	7.0	6.0	6.5	7.0	6.0	6.5	5.5	4.5	5.0
17	11.5	10.5	11.0	7.0	6.0	6.5	6.5	5.5	6.0	6.5	5.5	6.0
18	10.5	9.0	10.0	6.0	5.5	6.0	6.0	5.5	5.5	6.5	6.0	6.5
19	10.5	8.5	9.5	6.0	6.0	6.0	5.5	5.5	5.5	6.5	6.0	6.5
20	10.0	8.0	9.0	6.5	6.0	6.0	5.5	5.0	5.5	6.5	6.0	6.5
21	10.5	9.5	10.0	6.0	5.0	5.5	5.5	5.0	5.0	6.0	5.5	5.5
22	11.5	10.0	11.0	5.0	4.0	4.5	5.5	5.0	5.5	6.0	5.5	5.5
23	12.0	10.0	11.0	4.0	3.5	4.0	5.0	4.5	5.0	6.5	6.0	6.0
24	11.5	10.5	11.0	3.5	3.0	3.5	5.5	4.5	5.0	7.0	6.0	6.5
25	11.5	10.5	11.0	3.5	2.5	3.0	5.5	5.0	5.5	6.5	6.0	6.5
26	11.0	10.5	11.0	4.5	3.5	4.0	5.5	4.5	5.5	7.0	6.5	6.5
27	11.0	9.5	10.0	5.0	4.5	4.5	4.5	3.5	4.0	7.0	6.0	6.5
28	10.5	9.5	10.0	6.0	5.0	5.5	3.5	3.0	3.0	6.0	5.5	5.5
29	10.0	9.0	9.5	6.0	5.5	5.5	3.0	2.5	2.5	7.0	6.0	6.5
30	9.5	8.5	9.0	6.0	5.5	5.5	2.5	2.0	2.5	7.0	6.0	6.5
31	9.0	8.5	9.0	---	---	---	2.5	2.0	2.5	7.0	6.0	6.5
MONTH	14.5	8.0	11.5	9.5	2.5	6.0	7.0	2.0	5.0	7.0	2.0	5.5

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	5.0	5.5	8.0	7.0	7.5	7.5	7.0	7.5	12.5	11.0	11.5
2	6.0	4.5	5.5	8.0	7.0	7.5	8.5	7.0	7.5	12.5	10.5	11.5
3	6.0	4.5	5.5	8.5	7.5	8.0	8.5	7.0	8.0	12.5	10.5	11.5
4	6.0	4.5	5.0	9.0	7.5	8.0	10.5	6.5	8.5	14.5	10.0	12.0
5	5.5	4.0	5.0	9.0	7.5	8.0	11.0	7.0	9.0	12.0	10.5	11.5
6	6.0	5.0	5.5	9.5	7.5	8.5	11.0	7.5	9.5	13.5	10.0	11.5
7	6.5	5.5	6.0	9.5	8.0	8.5	10.0	9.0	9.5	12.5	10.0	11.5
8	6.0	5.0	5.5	8.5	8.0	8.5	10.5	8.0	9.0	11.0	9.5	10.0
9	7.0	5.5	6.0	8.5	8.0	8.0	9.0	7.5	8.5	12.0	9.0	10.5
10	7.0	6.0	7.0	8.5	7.5	8.0	9.0	7.0	8.0	11.5	9.5	10.5
11	8.0	7.0	7.5	8.5	7.0	7.5	10.0	6.5	8.0	13.5	9.0	11.0
12	8.0	7.5	7.5	8.5	7.5	8.0	9.5	7.0	8.0	14.5	9.5	12.0
13	8.0	7.0	7.5	8.5	7.0	8.0	11.0	7.0	9.0	15.0	10.5	13.0
14	7.0	6.5	7.0	9.0	7.5	8.0	11.5	7.5	9.5	13.0	10.5	11.5
15	6.5	6.0	6.5	9.5	7.5	8.0	12.5	8.5	10.0	11.0	9.5	10.0
16	7.5	6.0	6.5	9.5	7.0	8.0	13.0	9.0	11.0	11.5	9.5	10.5
17	8.0	7.0	7.5	10.0	7.0	8.5	13.5	9.5	11.5	11.5	10.5	11.0
18	7.0	6.5	7.0	10.0	7.0	8.5	13.5	10.5	12.0	14.0	10.0	11.5
19	7.0	6.0	6.5	10.5	7.5	8.5	13.5	11.0	12.0	15.0	10.0	12.5
20	7.5	6.5	6.5	9.5	7.5	8.5	12.5	11.0	11.5	16.0	11.0	13.5
21	7.0	6.0	6.5	10.0	8.5	9.0	12.5	10.0	11.0	15.0	12.5	13.5
22	8.5	7.0	7.5	10.5	8.5	9.5	11.5	9.0	10.0	16.5	11.0	13.5
23	9.5	8.0	8.5	10.5	8.5	9.0	10.5	9.0	10.0	17.5	12.0	14.5
24	9.0	7.5	8.5	10.0	7.5	8.5	11.5	9.0	10.0	18.5	12.5	15.5
25	8.0	7.0	7.5	10.0	8.0	9.0	10.5	8.0	9.0	18.0	13.0	15.5
26	7.5	7.0	7.5	9.0	8.0	8.5	12.0	8.5	10.0	17.5	13.0	15.5
27	7.5	6.5	7.0	10.0	8.0	9.0	13.5	8.5	11.0	19.5	13.5	16.0
28	8.0	6.5	7.0	8.5	8.0	8.0	14.0	9.5	11.5	20.0	14.5	17.5
29	---	---	---	9.0	7.5	8.0	14.0	10.0	12.0	21.0	16.0	18.5
30	---	---	---	9.0	7.5	8.0	14.0	11.0	12.5	19.0	15.5	16.5
31	---	---	---	9.0	7.5	8.0	---	---	---	15.0	13.5	14.0
MONTH	9.5	4.0	6.5	10.5	7.0	8.5	14.0	6.5	10.0	21.0	9.0	13.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	12.5	13.0	15.0	13.5	14.5	17.5	16.0	16.5	17.0	15.5	16.0
2	13.0	12.0	12.5	16.5	13.0	14.5	18.0	14.5	16.0	17.5	14.5	16.0
3	15.0	11.5	13.0	18.0	13.0	15.5	19.0	15.0	16.5	16.5	14.5	15.5
4	14.5	12.0	13.0	19.5	13.5	16.5	18.5	14.0	16.5	16.0	14.5	15.5
5	16.5	12.0	14.0	17.5	15.0	16.0	19.5	14.5	17.0	17.0	14.5	15.5
6	18.0	12.5	15.0	16.0	13.5	15.0	20.0	15.0	17.5	16.0	13.5	14.5
7	19.5	13.5	16.5	14.5	13.0	14.0	19.0	15.0	17.0	16.0	13.0	14.5
8	20.0	14.0	17.0	15.0	13.0	14.0	18.0	15.5	17.0	14.5	12.5	13.5
9	17.0	14.5	15.5	17.5	12.5	15.0	18.5	15.0	17.0	15.5	12.5	14.0
10	15.0	13.5	14.0	17.5	13.5	15.5	17.5	15.5	16.5	14.5	13.0	14.0
11	14.5	12.5	13.5	19.0	14.5	16.5	16.5	14.5	15.0	16.0	13.0	14.5
12	16.0	12.5	14.0	17.0	15.0	16.0	19.0	13.5	16.0	17.0	13.5	15.0
13	18.0	12.0	15.0	15.5	14.0	15.0	20.0	15.0	17.5	17.0	13.5	15.0
14	17.5	13.5	15.5	15.0	13.0	14.0	20.0	16.0	18.0	17.0	14.5	15.5
15	16.5	14.0	15.0	14.5	13.5	14.0	19.5	15.5	17.5	16.5	13.5	15.0
16	15.5	13.0	14.5	15.5	13.5	14.5	19.0	15.5	17.5	16.0	14.0	14.5
17	15.5	13.5	14.5	16.0	13.5	14.5	19.5	15.5	17.5	15.5	13.5	14.5
18	15.0	13.0	14.0	17.0	13.0	15.0	19.5	15.5	17.5	14.5	13.0	13.5
19	15.0	12.5	13.5	17.0	14.5	15.5	19.0	15.5	17.5	14.5	12.0	13.0
20	16.0	12.5	14.0	17.0	14.0	15.5	18.5	15.0	17.0	15.0	11.5	13.0
21	17.5	13.0	15.0	19.0	14.0	16.5	19.0	14.5	17.0	16.0	12.0	14.0
22	15.5	13.5	14.0	19.5	14.5	17.0	19.0	15.0	17.5	16.0	12.5	14.0
23	14.5	13.0	13.5	17.0	15.0	16.0	18.0	15.5	16.5	16.0	12.5	14.0
24	15.5	13.0	14.0	15.5	14.0	15.0	16.0	15.0	15.5	14.5	13.0	14.0
25	16.5	13.5	15.0	15.0	13.5	14.0	18.0	14.5	16.0	16.0	13.5	14.5
26	17.0	14.0	15.5	16.5	13.0	14.5	18.5	15.0	16.5	15.0	13.0	14.0
27	19.0	13.5	16.0	16.0	14.0	15.0	17.5	15.5	16.5	14.0	12.5	13.5
28	16.5	14.0	15.5	18.0	14.0	15.5	17.0	15.5	16.0	13.0	10.5	12.0
29	17.0	14.0	15.5	18.5	14.0	16.5	17.5	15.0	16.0	12.5	9.5	11.0
30	16.5	14.0	15.0	20.0	14.5	17.0	16.5	15.0	16.0	12.5	9.5	11.0
31	---	---	---	20.0	15.5	18.0	17.0	15.0	16.0	---	---	---
MONTH	20.0	11.5	14.5	20.0	12.5	15.5	20.0	13.5	16.5	17.5	9.5	14.0
YEAR	21.0	2.0	10.5									

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'55", long 122°14'48", in NW¼SW¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on right bank under highway bridge 0.6 mi southeast of Tukwila, 1.4 mi upstream from Black River, and at mile 12.4.

DRAINAGE AREA.--440 mi².

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October 1967 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records fair. Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 113 ft³/s from river at headworks near Palmer, 49 mi above station, for municipal use. Minor diversions and regulation on upstream tributaries. River stages are affected daily by backwater during high tide.

AVERAGE DISCHARGE.--23 years, 1,509 ft³/s, 1,093,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s Jan. 31, 1965, elevation, 21.70 ft; minimum recorded, 195 ft³/s Sept. 14, 15, 1961; minimum observed elevation, 2.26 ft Oct. 24, 1974, but may have been less during period of no gage-height record Oct. 14-27, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959, reached a stage of 22.63 ft, present datum from gage-height record of stages above 14.2 ft, discharge, 13,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,200 ft³/s Jan. 9, elevation, 19.83 ft; minimum daily, 429 ft³/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	560	1120	1040	854	1550	1710	3120	990	553	690	668	582
2	500	1150	1010	895	1470	1730	2470	990	561	685	665	595
3	550	954	1930	972	1350	1650	2290	890	611	641	606	551
4	560	895	5980	1410	1270	1560	1930	850	690	617	590	514
5	580	930	5600	3970	1190	1470	1870	931	671	627	577	504
6	610	1060	2990	6980	1230	1550	1810	956	668	690	571	496
7	630	1040	2540	7710	1280	1560	1740	909	663	699	571	507
8	630	965	1960	9800	1290	1920	1600	943	671	688	574	504
9	640	1100	1710	9670	1290	2830	1460	972	676	641	556	499
10	640	1180	1500	8790	1260	3790	1450	943	758	608	527	577
11	630	961	1310	7890	1340	3750	1440	943	787	606	548	611
12	630	954	1350	5710	1350	2980	1420	943	707	625	561	603
13	620	1430	1430	4360	1370	2760	1310	884	696	807	530	644
14	610	1310	1490	3540	1450	2410	1220	868	668	1620	502	685
15	610	1190	1680	2850	1620	2150	1160	931	614	1630	494	688
16	640	930	1740	2660	1690	1950	1100	927	590	1890	469	676
17	660	1130	2020	2540	1770	1850	1080	899	600	1950	449	865
18	650	1760	2050	2280	1980	1630	1090	874	625	1840	449	975
19	650	1980	2070	2190	2120	1420	1100	862	663	1050	444	1010
20	630	1690	2050	2100	2110	1360	1350	850	732	781	439	822
21	570	1510	1990	1870	2050	1360	1590	816	847	749	449	695
22	580	1380	1720	1720	2050	1530	1510	795	862	778	444	682
23	620	1200	1510	1830	2230	1500	1470	801	671	738	444	665
24	630	1110	1290	1830	2780	1440	1450	764	847	715	439	660
25	610	930	1240	1810	3080	1390	1400	679	761	735	432	654
26	530	891	1220	1830	2560	1320	1290	638	732	772	432	657
27	620	854	1170	2160	2330	1320	1160	582	710	810	429	595
28	770	923	1030	2100	2080	1330	1120	558	701	790	434	566
29	870	993	993	1830	---	1550	1080	553	679	755	454	502
30	1040	1030	993	1710	---	2580	1010	540	663	707	466	471
31	1080	---	902	1640	---	3120	---	540	---	676	509	---
TOTAL	20150	34550	57508	107501	49140	60470	45090	25621	20880	27610	15722	19056
MEAN	650	1152	1855	3468	1755	1951	1503	826	696	891	507	635
MAX	1080	1980	5980	9800	3080	3790	3120	990	871	1950	668	1010
MIN	500	854	902	854	1190	1320	1010	540	553	606	429	471
AC-FT	39970	68530	114100	213200	97470	119900	89440	50820	41420	54760	31180	37800

CAL YR 1982 TOTAL 590040 MEAN 1617 MAX 11300 MIN 278 AC-FT 1170000
WTR YR 1983 TOTAL 483298 MEAN 1324 MAX 9800 MIN 429 AC-FT 958600

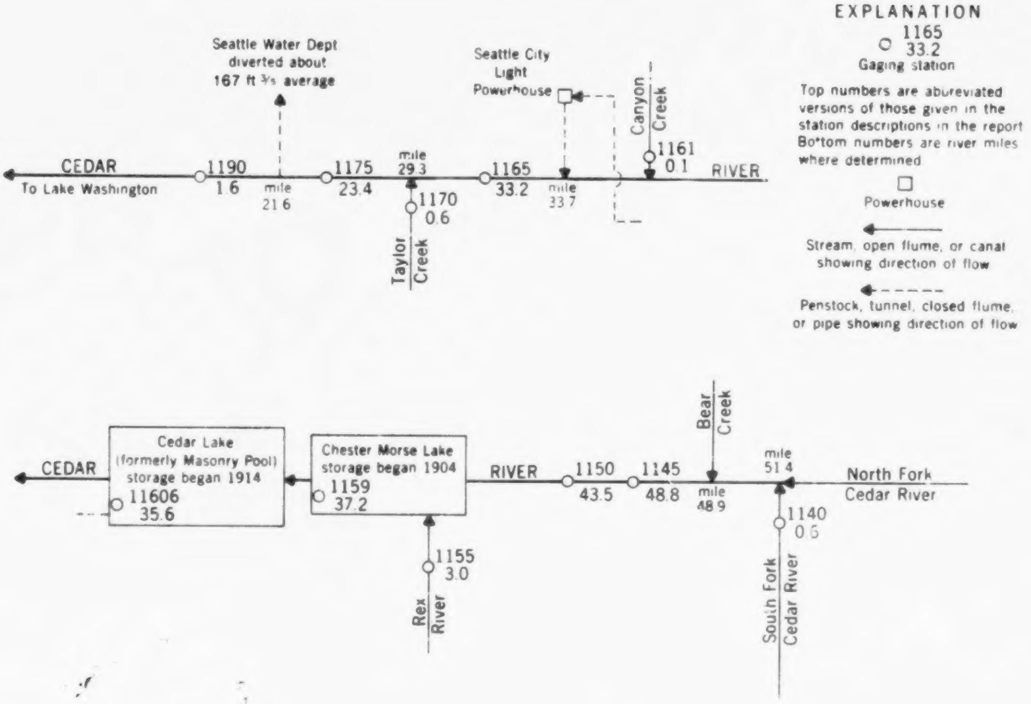
EXPLANATION
1165
33.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
Seattle Water Dept diverted about 167 ft³/s average
Seattle City Light Powerhouse
Canyon Creek
CEDAR
To Lake Washington
1190
1.6
mile 21.6
1175
23.4
mile 29.3
1170
0.6
Taylor Creek
1165
33.2
mile 33.7
1161
0.1
RIVER
Bear Creek
CEDAR
Cedar Lake (formerly Masonry Pool) storage began 1914
11606
35.6
Chester Morse Lake storage began 1904
1159
37.2
1155
3.0
Rex River
RIVER
1150
43.5
1145
48.8
mile 48.9
mile 51.4
1140
0.6
South Fork Cedar River
North Fork Cedar River

Figure 13.—Gaging stations in Lake Washington basin (Cedar River).

12114000 SOUTH FORK CEDAR RIVER NEAR LESTER, WA

LOCATION.--Lat 47°18'30", long 121°31'00", in NE¼SE¼ sec.15, T.21 N., R.10 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank under logging road bridge, 0.6 mi upstream from confluence with North Fork, and 6.7 mi north of Lester.

DRAINAGE AREA.--6.00 mi².

PERIOD OF RECORD.--October 1944 to September 1983 (discontinued).

REVISED RECORDS.--WSP 1446: 1953-54. WSP 1736: 19[illegible](M).

GAGE.--Water-stage recorder. Concrete control Aug. 31, 1951, to Dec. 9, 1956, and since Oct. 8, 1957. Altitude of gage is 2,[illegible] ft, from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--39 years, 37.1 ft³/s, 83.97 in/yr, 26,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,340 ft³/s Dec. 9, 1956, gage height, 10.41 ft, from floodmarks, from rating curve extended above 300 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.9 ft³/s Nov. 27, 28, 1952, gage height, 2.80 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2200	241	5.90	Jan. 8	0200	*349	*6.20

Minimum discharge, 5.5 ft³/s Aug. 29, 31, gage height, 4.22 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	40	14	9.5	17	33	44	38	24	15	13	9.0
2	7.7	36	13	10	16	32	39	38	22	15	12	9.4
3	8.4	32	112	12	15	31	34	38	20	15	11	7.7
4	7.7	32	147	25	14	31	32	36	18	14	11	7.0
5	7.4	45	74	70	13	31	29	39	17	14	10	6.4
6	9.0	54	53	96	13	31	28	45	16	14	10	6.4
7	16	47	42	247	13	34	28	47	15	13	10	6.4
8	16	39	35	247	13	53	27	42	15	13	9.7	6.2
9	18	32	30	108	12	100	26	38	15	13	9.4	7.4
10	16	27	26	175	12	98	24	33	18	12	9.0	18
11	17	24	23	126	13	80	22	31	16	11	9.7	27
12	18	22	22	84	14	64	21	30	15	13	8.7	20
13	15	20	20	64	15	54	19	30	14	30	8.0	18
14	13	17	18	53	16	48	18	32	13	58	8.0	16
15	13	17	17	45	16	43	18	33	14	131	7.7	14
16	13	16	24	39	17	38	19	30	13	73	7.4	13
17	13	30	22	33	35	34	21	28	13	52	7.0	12
18	12	35	20	29	45	31	27	29	15	40	6.7	15
19	12	34	19	28	39	29	36	31	16	33	6.4	13
20	11	31	18	26	38	26	45	34	19	27	6.4	12
21	10	27	17	23	35	25	47	43	19	24	6.2	11
22	13	24	16	22	40	25	43	42	19	22	6.2	11
23	13	22	15	20	56	25	41	46	18	19	6.2	10
24	13	21	14	20	70	24	47	46	17	18	6.2	10
25	13	20	13	20	61	24	40	45	15	17	6.0	9.7
26	15	20	12	20	51	22	34	40	16	17	5.7	9.4
27	17	18	11	23	43	22	30	38	15	16	6.0	9.0
28	22	15	10	22	37	22	29	43	14	15	6.0	8.7
29	40	15	10	20	---	47	31	45	13	14	5.7	8.4
30	34	14	9.5	19	---	58	32	38	13	13	7.0	7.7
31	34	---	9.5	17	---	50	---	29	---	13	5.7	---
TOTAL	474.6	826	886.0	1752.5	779	1265	931	1157	487	794	248.0	338.8
MEAN	15.3	27.5	28.6	56.5	27.8	40.8	31.0	37.3	16.2	25.6	8.00	11.3
MAX	40	54	147	247	70	100	47	47	24	131	13	27
MIN	7.4	14	9.5	9.5	12	22	18	28	13	11	5.7	6.2
CFSM	2.55	4.58	4.77	9.42	4.63	6.80	5.17	6.22	2.70	4.27	1.33	1.88
IN.	2.94	5.12	5.49	10.87	4.83	7.84	5.77	7.17	3.02	4.92	1.54	2.10
AC-FT	941	1640	1760	3480	1550	2510	1850	2290	966	1570	492	672

CAL YR 1982 TOTAL 13063.9 MEAN 35.8 MAX 301 MIN 3.9 CFSM 5.97 IN. 81.00 AC-FT 25910
WTR YR 1983 TOTAL 9938.9 MEAN 27.2 MAX 247 MIN 5.7 CFSM 4.53 IN. 61.62 AC-FT 19710

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'32", long 121°32'52", in SE¼SE¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft downstream from Bear Creek, and 12.2 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--25.4 mi².

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,880 ft, from topographic map. Prior to Sept. 16, 1960, at site 90 ft upstream at datum 2.35 ft higher.

REMARKS.--Records good except those above 1,100 ft³/s, which are fair. No regulation or diversion above station. USGS satellite telemeter at station.

AVERAGE DISCHARGE.--26 years (water years 1946-63, 1976-83), 171 ft³/s, 91.42 in/yr, 123,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s Nov. 22, 1959, gage height, 6.98 ft site and datum then in use, from rating curve extended above 890 ft³/s on basis of slope-area measurement of peak flow; minimum, 12 ft³/s Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s and maximum (*), from rating curve extended above 910 ft³/s on basis of slope-area measurement at gage height 9.37 ft:

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2100	1,500	5.07	July 15	0500	831	4.18
Jan. 8	0200	*1,600	*5.18				

Minimum discharge, 33 ft³/s Aug. 26, 27, gage height, 1.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	178	76	54	93	156	204	193	196	88	66	54
2	47	153	78	54	85	144	199	204	183	98	64	65
3	52	135	837	54	81	138	175	207	163	90	60	49
4	46	149	844	81	77	138	160	196	140	85	58	45
5	45	212	444	624	72	133	147	210	127	83	55	42
6	52	257	309	591	68	133	138	248	125	80	53	41
7	83	212	239	1070	67	151	135	242	133	76	52	40
8	81	178	201	1210	64	242	127	212	142	72	50	37
9	100	149	170	677	61	502	121	188	127	69	4[illegible]	50
10	93	127	147	953	64	507	114	163	153	66	49	129
11	84	110	127	713	73	392	107	153	135	62	54	168
12	76	100	116	458	78	313	100	149	117	78	49	112
13	69	90	112	343	85	264	93	153	103	196	45	93
14	64	81	107	284	91	230	90	168	105	320	44	83
15	60	76	119	242	93	201	87	175	114	671	42	74
16	62	76	175	210	101	178	90	158	98	388	41	71
17	67	153	158	188	178	160	100	151	100	267	40	66
18	59	168	144	165	221	144	123	175	123	207	39	80
19	55	163	131	163	191	131	163	183	133	173	38	69
20	52	151	119	151	193	121	204	218	140	160	37	64
21	52	131	107	138	175	117	218	274	125	142	36	59
22	65	114	98	123	180	117	199	264	116	121	36	57
23	67	101	90	121	230	116	193	295	108	110	35	55
24	61	93	81	119	298	110	218	298	103	101	35	53
25	60	85	77	117	264	108	185	309	93	101	34	50
26	76	80	72	127	230	103	163	277	100	95	34	49
27	85	76	68	151	199	101	144	271	90	90	35	50
28	108	72	64	135	170	101	142	347	85	87	36	46
29	193	76	61	119	---	233	151	375	81	78	35	45
30	156	76	58	108	---	288	163	306	83	73	44	43
31	149	---	53	100	---	236	---	227	---	69	35	---
TOTAL	2364	3822	5482	9643	3782	6008	4453	6989	3641	4396	1380	1939
MEAN	76.3	127	177	311	135	194	148	225	121	142	44.5	64.6
MAX	193	257	844	1210	298	507	218	375	196	671	66	168
MIN	45	72	53	54	61	101	87	149	81	62	34	37
CFSM	3.00	5.00	6.97	12.2	5.31	7.64	5.83	8.86	4.76	5.59	1.75	2.54
IN.	3.46	5.60	8.03	14.12	5.54	8.80	6.52	10.24	5.33	6.44	2.02	2.84
AC-FT	4690	7580	10870	19130	7500	11920	8830	13860	7220	8720	2740	3850

CAL YR 1982 TOTAL 63578 MEAN 174 MAX 1220 MIN 25 CFSM 6.85 IN. 93.11 AC-FT 126100
WTR YR 1983 TOTAL 53899 MEAN 148 MAX 1210 MIN 34 CFSM 5.83 IN. 78.94 AC-FT 106900

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE¼SW¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi upstream from Chester Morse Lake, 8.3 mi southeast of town of Cedar Falls, and at mile 43.5.

DRAINAGE AREA.--40.7 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P), 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,560 ft, from topographic map. Prior to Oct. 26, 1957, at site 80 ft downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years, 266 ft³/s, 88.75 in/yr, 192,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft³/s Nov. 22, 1959, gage height, 11.34 ft, from high-water mark in well, from rating curve extended above 4,300 ft³/s, on basis of slope-area measurements at gage heights 10.16 ft and 11.34 ft; maximum gage height, 11.4 ft Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 20 ft³/s Nov. 30 to Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2200	2,200	7.32	July 15	0600	1,220	5.98
Jan. 8	0300	*2,450	*7.63				

Minimum discharge, 44 ft³/s Aug. 26, 27, gage height, 2.34 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	271	128	86	155	229	335	261	244	135	103	83
2	75	237	138	87	145	216	321	278	225	159	98	103
3	87	212	1180	93	136	208	288	285	206	147	94	78
4	78	225	1310	153	128	204	255	266	181	138	89	68
5	73	329	648	1040	122	202	235	288	167	131	84	61
6	86	458	437	937	118	202	219	353	159	126	81	59
7	142	359	326	1670	118	223	216	350	164	122	79	62
8	151	280	264	1910	109	338	202	312	172	114	76	57
9	161	229	223	958	108	711	195	278	163	111	74	81
10	155	197	195	1360	111	716	183	246	195	104	73	164
11	141	172	176	1040	132	580	174	229	181	98	83	298
12	128	156	164	694	138	465	161	221	158	125	78	201
13	115	141	161	532	155	393	151	221	141	310	68	163
14	106	126	159	416	164	335	142	235	138	486	62	142
15	99	119	181	350	163	293	139	255	155	1020	59	126
16	99	124	271	296	183	259	141	229	135	615	57	118
17	114	237	250	261	285	231	148	217	138	427	56	109
18	99	290	223	229	368	214	178	239	176	324	55	126
19	92	283	204	227	315	197	223	246	184	261	53	118
20	86	273	184	214	301	183	278	275	212	235	52	103
21	84	231	171	193	271	174	304	353	195	202	51	95
22	104	201	155	181	278	174	278	344	179	176	49	92
23	111	176	142	183	350	172	266	371	171	159	49	86
24	103	158	129	176	451	164	307	377	159	147	49	82
25	98	144	124	179	413	161	264	385	144	148	47	79
26	122	132	118	192	350	156	237	353	148	145	46	76
27	136	126	110	225	293	151	212	332	136	135	46	80
28	171	128	108	217	252	151	201	403	128	131	51	73
29	347	125	103	197	---	393	212	437	124	121	49	70
30	264	125	97	181	---	490	223	377	124	113	65	67
31	235	---	84	166	---	400	---	280	---	106	51	---
TOTAL	3934	6264	8163	14643	6112	8985	6688	9296	5002	6773	2027	3120
MEAN	127	209	263	472	218	290	223	300	167	218	65.4	104
MAX	347	458	1310	1910	451	716	335	437	244	1020	103	298
MIN	72	119	84	86	108	151	139	217	124	98	46	57
CFSM	3.12	5.14	6.46	11.6	5.36	7.13	5.48	7.37	4.10	5.36	1.61	2.56
IN.	3.60	5.73	7.46	13.38	5.59	8.21	6.11	8.50	4.57	6.19	1.85	2.85
AC-FT	7800	12420	16190	29040	12120	17820	13270	18440	9920	13430	4020	6190

CAL YR 1982 TOTAL 97056 MEAN 266 MAX 2260 MIN 35 CFSM 6.54 IN. 88.71 AC-FT 192500
WTR YR 1983 TOTAL 81007 MEAN 222 MAX 1910 MIN 46 CFSM 5.45 IN. 74.04 AC-FT 160700

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE¼NW¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi upstream from mouth and Chester Morse Lake, and 7.5 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--13.4 mi^2.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WDR WA-74-1: 1973.

GAGE.--Water-stage recorder. Altitude of gage is 1,600 ft, from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years, 104 ft^3/s, 105.40 in/yr, 75,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft^3/s Nov. 22, 1959, gage height, 8.20 ft, from rating curve extended above 1,600 ft^3/s on basis of contracted-opening measurement at gage height 7.19 ft and slope-area measurement at gage height 8.20 ft; maximum gage height, Nov. 19, 1962, backwater from debris; minimum discharge, 4.3 ft^3/s Nov. 29, 1952, gage height, 2.43 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2100	1,160	5.98	July 14	2400	927	5.71
Jan. 8	0200	*1,620	*6.44				

Minimum discharge, 12 ft^3/s Aug. 26, 27, gage height, 3.41 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	137	60	28	49	78	134	82	40	69	43	45
2	37	99	71	27	44	77	122	86	39	84	39	64
3	49	82	864	28	39	73	103	90	35	69	36	34
4	37	117	466	117	36	67	97	78	30	63	34	29
5	35	198	222	675	34	73	90	97	28	57	31	26
6	55	219	148	560	31	78	84	134	26	54	29	27
7	112	148	108	1030	31	99	82	119	25	49	27	29
8	92	110	88	911	28	201	73	108	23	45	26	26
9	90	86	73	363	28	326	68	105	21	44	25	43
10	69	69	64	795	35	273	63	97	60	38	23	160
11	60	60	57	378	57	188	58	88	45	35	34	151
12	52	54	66	198	69	157	55	84	36	86	27	99
13	45	48	71	148	80	134	51	78	31	261	23	75
14	40	43	71	117	84	115	49	78	28	308	20	64
15	37	39	101	97	78	99	48	90	42	518	19	54
16	43	49	179	84	99	86	51	80	33	222	19	51
17	47	198	143	80	154	77	55	75	40	172	18	43
18	38	172	108	73	146	68	68	80	73	132	17	68
19	35	146	92	82	119	61	78	77	86	103	17	52
20	31	122	78	75	122	58	90	80	127	103	16	44
21	36	97	69	64	105	55	97	82	92	86	15	39
22	49	77	60	60	122	63	84	77	78	73	14	36
23	43	64	54	63	182	60	86	75	73	64	14	34
24	38	57	49	63	185	55	97	69	63	58	14	31
25	37	51	45	64	146	54	75	66	55	78	14	29
26	66	45	43	71	119	51	73	60	58	71	12	29
27	68	45	38	92	99	49	64	57	48	64	12	35
28	143	58	36	80	86	55	64	57	43	63	14	27
29	226	55	33	69	---	235	68	54	42	55	15	25
30	134	55	31	61	---	215	59	47	45	51	25	23
31	132	---	29	55	---	163	---	43	---	47	16	---
TOTAL	2009	2800	3617	6608	2407	3443	2296	2493	1465	3222	688	1492
MEAN	64.8	93.3	117	213	86.0	111	76.5	80.4	48.8	104	22.2	49.7
MAX	226	219	864	1030	185	326	134	134	127	518	43	160
MIN	31	39	29	27	28	49	48	43	21	35	12	23
CFSM	4.84	6.96	8.73	15.9	6.42	8.28	5.71	6.00	3.64	7.76	1.66	3.71
IN.	5.58	7.77	10.04	18.34	6.68	9.56	6.37	6.92	4.07	8.94	1.91	4.14
AC-FT	3980	5550	7170	13110	4770	6830	4550	4940	2910	6390	1360	2960

CAL YR 1982 TOTAL 39031 MEAN 107 MAX 1320 MIN 10 CFSM 7.99 IN. 108.35 AC-FT 77420
WTR YR 1983 TOTAL 32540 MEAN 89.2 MAX 1030 MIN 12 CFSM 6.66 IN. 90.33 AC-FT 64540

12115900 CHESTER MORSE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°24'34", long 121°43'22", in SW¼NE¼ sec.12, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, 100 ft upstream of Crib Dam, 3.1 mi southeast of town of Cedar Falls, and at mile 37.2.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Nonrecording gage. Datum of gage is 7.39 ft National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Reservoir is formed by concrete gravity dam. Useable capacity, 37,186 acre-ft between gage heights 1,532 ft, between gage heights 1,532 ft, minimum operation level, and 1,555 ft, spillway crest. Unused storage below gage height 1,532 ft, 38,137 acre-ft. Water is used by city of Seattle for municipal water supply and power production.

COOPERATION.--Gage-height record furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,566.82 ft Dec. 3, 1977; minimum observed, 1,535.60 ft Oct. 16, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,559.13 ft Jan. 11; minimum observed, 1,540.82 ft Oct. 28.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1542.88	1542.74	1545.10	1544.60	1547.60	1547.95	1549.15	1549.75	1552.32	1549.60	1554.70	1548.06
2	1543.00	1543.00	1545.04	1544.28	1547.02	1547.56	1549.20	1549.80	1552.17	1549.68	1554.48	1547.86
3	1543.20	1543.20	1545.83	1544.21	1546.51	1547.16	1549.20	1549.94	1552.00	1549.74	1554.36	1547.68
4	1543.45	1542.28	1549.46	1544.15	1546.10	1546.78	1549.46	1549.98	1551.80	1549.75	1554.23	1547.30
5	1543.52	1543.60	1550.60	1545.55	1545.82	1546.45	1549.59	1549.92	1551.55	1549.68	1554.06	1547.00
6	1543.42	1544.58	1550.62	1548.50	1545.62	1546.45	1549.64	1549.89	1551.34	1549.65	1553.88	1546.60
7	1543.60	1545.10	1550.31	1550.81	1545.50	1546.54	1549.92	1550.68	1551.10	1549.61	1553.74	1546.58
8	1543.83	1545.48	1550.13	1555.32	1545.35	1546.54	1550.01	1550.86	1550.88	1549.56	1553.54	1546.16
9	1543.87	1545.70	1549.48	1557.30	1545.18	1547.04	1550.06	1550.99	1550.69	1549.50	1553.38	1546.12
10	1543.96	1545.67	1548.90	1558.05	1545.18	1548.16	1550.26	1551.22	1550.46	1549.44	1553.12	1546.02
11	1543.90	1545.62	1548.22	1559.13	1545.22	1549.08	1550.34	1551.26	1550.40	1549.30	1552.98	1546.45
12	1543.80	1545.61	1547.50	1558.87	1545.27	1549.50	1549.99	1551.35	1550.25	1549.35	1552.86	1547.18
13	1543.60	1545.58	1547.0[illegible]	1558.30	1545.40	1549.54	1549.78	1551.42	1549.96	1549.60	1552.69	1547.11
14	1543.34	1545.39	1546.78	1557.65	1545.62	1549.12	1549.66	1551.35	1549.74	1550.48	1552.52	1547.15
15	1543.05	1545.16	1546.61	1556.96	1545.81	1548.75	1549.58	1551.46	1549.43	1552.16	1552.30	1547.05
16	1542.78	1545.18	1546.34	1556.30	1545.85	1548.40	1549.42	1551.51	1549.23	1554.02	1552.00	1546.90
17	1542.60	1545.20	1546.53	1555.80	1546.02	1547.88	1549.33	1551.54	1549.12	1554.72	1551.79	1546.63
18	1542.48	1545.80	1546.54	1555.40	1546.41	1547.36	1549.18	1551.56	1549.10	1555.16	1551.52	1546.48
19	1542.28	1546.20	1546.41	1554.71	1546.56	1546.89	1549.08	1551.57	1549.19	1555.32	1551.28	1546.68
20	1541.88	1546.40	1546.29	1554.20	1546.88	1546.75	1549.16	1551.60	1549.36	1555.32	1551.08	1546.40
21	1541.60	1546.50	1546.17	1553.80	1547.00	1546.74	1549.27	1551.68	1549.52	1555.36	1550.86	1546.20
22	1541.46	1546.36	1546.12	1553.14	1546.75	1546.51	1549.44	1551.79	1549.64	1555.36	1550.60	1546.00
23	1541.32	1545.90	1545.92	1552.52	1546.73	1546.48	1549.48	1551.90	1549.70	1555.28	1550.28	1545.82
24	1541.17	1545.90	1545.78	1551.95	1547.02	1546.54	1549.67	1552.02	1549.80	1555.22	1550.06	1545.67
25	1540.95	1545.78	1545.66	1551.43	1547.30	1546.55	1549.80	1552.19	1549.80	1555.14	1549.85	1545.44
26	1540.88	1545.50	1545.59	1550.80	1547.61	1546.58	1549.82	1552.35	1549.79	1555.20	1549.60	1545.35
27	1540.84	1545.36	1545.54	1550.30	1548.04	1546.54	1549.82	1552.38	1549.76	1555.14	1549.29	1545.18
28	1540.82	1545.28	1545.33	1549.88	1548.15	1546.59	1549.81	1552.45	1549.72	1555.12	1549.10	1545.03
29	1541.50	1545.24	1545.10	1549.41	---	1546.79	1549.76	1552.39	1549.65	1555.06	1548.96	1544.87
30	1542.00	1545.20	1544.88	1548.80	---	1547.88	1549.76	1552.47	1549.65	1554.95	1548.76	1544.60
31	1542.32	---	1544.68	1548.23	---	1548.64	---	1552.41	---	1554.84	1548.44	---
MEAN	1542.56	1545.15	1546.92	1552.27	1546.34	1547.41	1549.62	1551.34	1550.24	1552.53	1551.82	1546.39
MAX	1543.96	1546.50	1550.62	1559.13	1548.15	1549.54	1550.34	1552.47	1552.32	1555.36	1554.70	1548.06
MIN	1540.82	1542.28	1544.68	1544.15	1545.18	1546.45	1549.08	1549.75	1549.10	1549.30	1548.44	1544.60

WTR YR 1983 MEAN 1548.57 MAX 1559.13 MIN 1540.82

12116060 CEDAR LAKE (MASONRY POOL) NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°24'43", long 121°45'04", in NE¼NW¼ sec.11, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, at Masonry Dam, 1.6 mi southeast of town of Cedar Falls, and at mile 35.6.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.39 ft National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Reservoir is formed by masonry gravity dam. Usable capacity, 40,285 acre-ft between gage heights 1,530.0 ft, normal minimum regulating pool, and 1,554.6 ft, normal maximum regulating pool. Unused storage below gage height 1,530.0 ft, 36,000 acre-ft. Water is used by city of Seattle for municipal water supply and power production.

COOPERATION.--Gage-height record furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,566.82 ft Dec. 3, 1977; minimum not determined (during period Aug. 2 to Sept. 19, 1978, while the pool was drained for maintenance).

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,559.13 ft Jan. 11; minimum observed, 1,514.80 ft Oct. 6.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1527.29	1532.56	1533.31	1537.79	1547.35	1547.80	1549.15	1549.75	1552.32	1549.60	1554.70	1548.06
2	1523.20	1532.90	1536.20	1538.74	1546.94	1547.48	1549.20	1549.80	1552.17	1549.68	1554.48	1547.86
3	1520.05	1533.08	1536.72	1538.75	1545.24	1547.05	1549.20	1549.94	1552.00	1549.74	1554.36	1547.68
4	1516.52	1533.34	1549.46	1537.56	1542.65	1546.48	1549.46	1549.98	1551.80	1549.75	1554.23	1547.30
5	1515.50	1533.68	1550.60	1539.44	---	1545.18	1549.59	1549.92	1551.55	1549.68	1554.06	1547.00
6	1514.80	1534.21	1550.62	1548.50	1540.00	1546.40	1549.64	1549.89	1551.34	1549.65	1553.88	1546.51
7	1514.82	1534.78	1550.31	1550.81	1540.92	1546.30	1549.92	1550.68	1551.10	1549.61	1553.74	1546.02
8	1518.95	1535.52	1550.13	1555.32	1537.80	1546.15	1550.01	1550.86	1550.88	1549.56	1553.54	1545.87
9	1520.98	1536.10	1549.48	1557.30	1540.82	1546.50	1550.06	1550.99	1550.69	1549.50	1553.38	1545.73
10	1522.81	1536.52	1548.90	1558.05	1542.36	1548.16	1550.26	1551.22	1550.46	1549.44	1553.12	1545.60
11	1524.26	1536.62	1548.22	1559.13	1542.60	1549.08	1550.34	1551.26	1550.40	1549.30	1552.98	1546.18
12	1526.86	1536.64	1547.50	1558.87	1542.79	1549.50	1549.99	1551.35	1550.25	1549.35	1552.86	1546.86
13	1529.13	1536.60	1546.35	1558.30	1542.94	1549.54	1549.78	1551.42	1549.96	1549.60	1552.69	1547.11
14	1528.80	1536.42	1544.48	1557.65	1543.20	1549.12	1549.66	1551.35	1549.74	1550.48	1552.52	1547.15
15	1528.04	1536.33	1542.96	1556.96	1543.52	1548.75	1549.58	1551.46	1549.43	1552.16	1552.30	1547.05
16	1527.15	1536.25	1540.44	1556.30	1544.12	1548.40	1549.42	1551.51	1549.23	1554.02	1552.00	1546.90
17	1526.33	1536.41	1544.06	1555.80	1544.72	1547.70	1549.33	1551.54	1549.12	1554.72	1551.79	1546.63
18	1525.50	1536.94	1543.64	1555.40	1544.98	1547.10	1549.18	1551.56	1549.10	1555.16	1551.52	1546.48
19	1524.40	1538.92	1542.67	1554.71	1546.10	1546.89	1549.08	1551.57	1549.19	1555.32	1531.28	1546.44
20	1523.35	1541.56	1543.53	1554.20	1546.88	1546.75	1549.16	1551.60	1549.36	1555.32	1551.08	1546.03
21	1522.28	1543.58	1541.61	1553.80	1546.95	1546.60	1549.27	1551.68	1549.52	1555.36	1550.86	1545.52
22	1522.60	1544.02	1541.40	1553.14	1546.75	1545.49	1549.44	1551.79	1549.64	1555.36	1550.60	1544.98
23	1524.84	1540.17	1540.70	1552.52	1546.73	1546.35	1549.48	1551.90	1549.70	1555.28	1550.28	1544.34
24	1526.70	1537.51	1539.60	1551.95	1546.82	1546.45	1549.67	1552.02	1549.80	1555.22	1550.06	1543.44
25	1527.90	1536.29	1539.70	1551.43	1547.30	1546.50	1549.80	1552.19	1549.80	1555.14	1549.85	1542.71
26	1528.90	1536.20	1541.11	1550.80	1547.61	1546.58	1549.82	1552.35	1549.79	1555.20	1549.60	1541.97
27	1529.96	1533.86	1540.74	1550.30	1548.04	1546.54	1549.82	1552.38	1549.76	1555.14	1549.29	1541.45
28	1530.55	1535.96	1537.07	1549.88	1548.15	1546.59	1549.81	1552.45	1549.72	1555.12	1549.10	1540.93
29	1531.17	1536.94	1535.81	1549.41	---	1546.79	1549.76	1552.39	1549.65	1555.06	1548.96	1540.51
30	1531.65	1535.59	1535.95	1548.80	---	1547.88	1549.76	1552.47	1549.65	1554.95	1548.76	1540.61
31	1532.12	---	1535.80	1548.23	---	1548.64	---	1552.41	---	1554.84	1548.44	---
MEAN	1524.76	1536.52	1542.87	1551.29	---	1547.25	1549.62	1551.34	1550.24	1552.53	1551.82	1545.36
MAX	1532.12	1544.02	1550.62	1559.13	---	1549.54	1550.34	1552.47	1552.32	1555.36	1554.70	1548.06
MIN	1514.80	1532.56	1533.31	1537.56	---	1545.18	1549.08	1549.75	1549.10	1549.30	1548.44	1540.51

BEST COPY AVAILABLE

12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'11", long 121°45'55", in NW¼SE¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft upstream from mouth, and 0.8 mi east of town of Cedar Falls.

DRAINAGE AREA.--0.19 mi².

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 1,040 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--38 years, 15.5 ft³/s, 11,260 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft³/s Dec. 7, 1975, gage height, 2.22 ft; minimum, 0.3 ft³/s for many days during 1953-55, 1958 and 1961 water years, Oct. 28, 29, 1966, Nov. 27, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32 ft³/s Jan. 19, gage height, 1.42 ft; minimum, 1.2 ft³/s all or part of each day Oct. 27 to Nov. 5, gage height, 0.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	1.2	2.8	5.2	16	7.1	8.3	11	14	12	25	13
2	3.2	1.2	2.8	4.9	15	7.1	8.3	11	14	12	25	13
3	3.2	1.2	3.8	4.9	14	7.1	8.3	11	14	12	25	12
4	3.0	1.2	3.6	5.5	14	7.1	8.6	11	14	12	24	12
5	3.0	1.3	3.0	6.8	13	7.1	8.7	11	14	12	24	12
6	3.0	1.3	3.0	5.5	13	7.5	8.7	11	14	12	24	12
7	2.8	1.3	3.2	5.3	12	7.5	8.7	11	14	12	24	11
8	2.8	1.3	3.5	5.9	11	7.5	9.1	11	14	12	23	11
9	2.7	1.3	4.0	5.2	10	7.8	9.2	11	14	12	22	11
10	2.6	1.3	4.4	5.8	9.7	7.8	9.3	11	14	12	22	10
11	2.5	1.2	5.0	7.6	9.2	7.5	9.7	12	14	12	22	10
12	2.5	1.3	5.6	11	8.7	7.5	9.7	12	14	12	21	9.7
13	2.3	1.3	6.1	15	8.3	7.8	9.9	12	14	12	20	9.5
14	2.3	1.4	6.4	19	7.9	7.9	10	12	14	12	20	9.2
15	2.0	1.5	6.6	23	7.5	7.9	10	12	13	12	19	9.1
16	2.0	1.6	6.7	26	7.5	8.0	10	12	13	12	18	8.7
17	2.0	2.0	6.7	29	7.1	8.3	10	12	13	12	18	8.7
18	2.0	2.0	6.7	31	7.1	8.3	11	12	13	13	18	8.7
19	2.0	2.0	6.7	32	6.7	8.3	11	12	13	14	17	8.7
20	1.8	2.1	6.7	31	6.7	8.3	11	13	13	15	17	8.4
21	1.8	2.1	6.7	30	6.7	8.3	11	13	13	16	16	8.3
22	1.7	2.2	6.7	30	6.7	8.3	11	13	13	17	16	8.3
23	1.7	2.3	6.4	29	6.7	8.3	11	13	13	18	15	8.0
24	1.5	2.3	6.4	27	6.7	8.3	11	13	13	19	15	7.9
25	1.4	2.4	6.4	26	6.7	8.3	11	13	13	20	15	7.8
26	1.4	2.5	6.1	24	6.7	8.3	11	13	12	21	14	7.5
27	1.4	2.7	6.1	22	6.7	8.3	11	13	12	22	14	7.4
28	1.2	2.8	5.9	21	6.7	8.3	11	13	12	23	14	7.1
29	1.3	2.8	5.8	20	---	8.5	11	13	12	23	14	6.8
30	1.2	2.8	5.6	18	---	8.6	11	13	12	24	14	6.6
31	1.2	---	5.5	17	---	8.3	---	13	---	25	13	---
TOTAL	66.7	53.9	164.9	543.6	258.0	245.2	299.5	374	399	474	588	283.4
MEAN	2.15	1.80	5.32	17.5	9.21	7.91	9.98	12.1	13.3	15.3	19.0	9.45
MAX	3.2	2.8	6.7	32	16	8.6	11	13	14	25	25	13
MIN	1.2	1.2	2.8	4.9	6.7	7.1	8.3	11	12	12	13	6.6
AC-FT	132	107	327	1080	512	486	594	742	791	940	1170	562

CAL YR 1982 TOTAL 4204.6 MEAN 11.5 MAX 54 MIN 1.2 AC-FT 8340
WTR YR 1983 TOTAL 3750.2 MEAN 10.3 MAX 32 MIN 1.2 AC-FT 7440

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW¼SE¼ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi downstream from Seattle municipal powerplant at town of Cedar Falls, 4.0 mi downstream from Chester Morse Lake, and at mile 33.2.

DRAINAGE AREA.--84.2 mi².

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1286: 1934(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for the period of no gage-height record Mar. 26 to May 4, which are fair. All artificially diverted water returned to river above station. Flow regulated by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060).

AVERAGE DISCHARGE.--69 years, 321 ft³/s, 232,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,860 ft³/s Dec. 3, 1975, gage height, 11.68 ft; no flow for part of Nov. 25, 1917, Aug. 18, 1923; minimum daily, 0.5 ft³/s Oct. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,600 ft³/s Jan. 11, gage height, 8.02 ft; minimum, 20 ft³/s Sept. 8, 9, gage height, 4.59 ft; minimum daily, 44 ft³/s Feb. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	188	98	106	746	658	400	180	244	92	88	247
2	135	185	254	104	746	587	570	180	244	92	90	234
3	135	185	485	305	647	550	200	180	251	92	90	282
4	104	188	510	128	540	614	130	185	247	88	90	282
5	119	191	752	218	480	206	200	160	247	81	90	282
6	157	197	740	625	126	179	135	163	247	86	90	282
7	112	194	734	770	443	324	133	176	251	88	88	209
8	160	191	722	911	171	475	128	182	182	76	85	90
9	163	188	722	1140	44	647	125	185	254	67	110	86
10	163	194	728	1360	58	344	125	185	258	61	106	104
11	209	200	728	1580	85	587	405	188	258	70	112	112
12	244	200	734	1500	83	505	220	185	258	86	110	104
13	286	203	734	1330	85	734	230	185	258	106	106	98
14	348	200	734	1170	100	734	165	185	258	119	106	137
15	348	200	675	1030	104	734	240	188	265	142	106	212
16	348	200	368	904	110	728	175	176	231	98	108	209
17	348	218	619	826	261	728	170	165	121	83	108	209
18	344	221	630	782	340	728	290	168	94	81	108	212
19	344	221	412	764	121	416	195	168	96	261	104	215
20	344	225	576	764	275	179	185	163	98	108	104	212
21	316	218	398	758	398	555	180	163	98	121	104	206
22	251	576	394	758	535	126	170	160	88	119	102	206
23	218	647	390	758	550	112	166	163	92	117	104	206
24	218	495	373	752	561	110	164	160	96	112	106	203
25	218	282	117	752	155	112	210	160	92	112	102	203
26	203	485	117	752	215	112	180	197	92	112	100	203
27	185	185	500	752	137	113	180	234	92	110	100	206
28	185	171	425	752	425	118	180	237	67	108	100	203
29	194	352	293	752	---	200	180	237	60	88	100	165
30	191	466	308	746	---	180	180	247	79	88	194	157
31	188	---	112	710	---	170	---	251	---	94	293	---
TOTAL	6978	7866	15382	24559	8541	12565	6211	5756	5218	3158	3404	5776
MEAN	225	262	496	792	305	405	207	186	174	102	110	193
MAX	348	647	752	1580	746	734	570	251	265	261	293	282
MIN	104	171	98	104	44	110	125	160	60	61	85	86
AC-FT	13840	15600	30510	48710	16940	24920	12320	11420	10350	6260	6750	11460

CAL YR 1982 TOTAL 138743 MEAN 380 MAX 2940 MIN 44 AC-FT 275200
WTR YR 1983 TOTAL 105414 MEAN 289 MAX 1580 MIN 44 AC-FT 209100

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW¼NW¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi upstream from mouth, and 1.3 mi northeast of Selleck.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft, from topographic map. June to October 1945 on right bank 350 ft downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--27 years, 100 ft³/s, 78.95 in/yr, 72,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft³/s Jan. 29, 1965, gage height, 5.76 ft from rating curve extended above 1,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 15 ft³/s Oct. 3, 4, 7-14, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2200	640	3.92	July 15	0100	507	3.70
Jan. 5	1200	*841	*4.20				

Minimum discharge, 26 ft³/s Oct. 15, gage height, 2.03 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	58	78	62	89	87	123	50	44	59	60	49
2	29	50	80	63	84	83	129	51	44	63	58	62
3	36	45	486	78	80	77	115	51	42	52	54	42
4	30	69	384	221	78	74	106	49	39	49	51	40
5	32	98	212	652	75	74	96	56	38	47	51	37
6	37	107	159	446	77	75	89	69	37	46	49	37
7	40	87	127	518	77	77	86	66	35	45	47	38
8	36	74	109	598	72	134	83	71	35	46	46	35
9	40	63	98	379	74	230	81	77	34	45	46	40
10	34	58	91	414	80	203	81	72	62	42	45	77
11	31	52	84	309	84	154	78	65	47	39	60	77
12	31	51	94	242	80	134	74	60	45	72	51	58
13	29	49	123	206	87	123	72	58	43	81	45	49
14	28	44	117	176	86	106	68	56	39	173	44	47
15	27	43	127	159	84	98	65	69	46	338	43	43
16	34	62	154	151	89	91	63	60	40	173	42	42
17	39	156	140	149	109	86	62	56	49	127	40	39
18	31	134	125	142	104	80	60	58	59	104	39	59
19	30	134	117	138	96	77	59	55	58	91	39	51
20	28	131	106	139	106	74	59	51	91	98	38	44
21	31	104	102	122	94	72	60	50	71	83	38	42
22	49	87	94	115	91	75	58	49	63	72	37	39
23	36	75	89	114	113	72	55	47	65	68	37	38
24	31	69	83	104	131	68	58	45	58	65	37	37
25	31	63	81	105	121	66	55	44	52	87	35	35
26	52	60	81	104	113	66	58	44	52	80	34	38
27	40	60	75	127	102	66	54	43	49	77	34	42
28	69	77	72	115	93	72	54	40	47	80	35	37
29	115	74	69	104	---	195	51	39	46	72	38	34
30	71	78	68	100	---	176	50	40	46	66	40	33
31	62	---	65	93	---	138	---	43	---	62	34	---
TOTAL	1238	2312	3890	6445	2569	3203	2202	1684	1476	2702	1347	1341
MEAN	39.9	77.1	125	208	91.8	103	73.4	54.3	49.2	87.2	43.5	44.7
MAX	115	156	486	652	131	230	129	77	91	338	60	77
MIN	27	43	65	62	72	66	50	39	34	39	34	33
CFSM	2.32	4.48	7.27	12.1	5.34	5.99	4.27	3.16	2.86	5.07	2.53	2.60
IN.	2.68	5.00	8.41	13.94	5.56	6.93	4.76	3.64	3.19	5.84	2.91	2.90
AC-FT	2460	4590	7720	12780	5100	6350	4370	3340	2930	5360	2670	2660

CAL YR 1982 TOTAL 33921 MEAN 92.9 MAX 575 MIN 21 CFSM 5.40 IN. 73.36 AC-FT 67280
WTR YR 1983 TOTAL 30409 MEAN 83.3 MAX 652 MIN 27 CFSM 4.84 IN. 65.77 AC-FT 60320

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'38", long 121°57'12", on west line NW¼SW¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi east of Maple Valley, 5.9 mi downstream from Taylor Creek, and at mile 23.4.

DRAINAGE AREA.--121 mi², excludes Walsh Lake diversion which enters Cedar River at mile 19.5, and excludes 1.9 mi² of Walsh Lake drainage in Cedar River basin which is normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1907-09. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1898, nonrecording gage at site 2.2 mi downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi downstream at datum 535.84 ft National Geodetic Vertical Datum of 1929 (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi downstream at different datum.

REMARKS.--Water-discharge records excellent. All diversions except Rock Creek returned to river above station. Rock Creek, a tributary which entered naturally just above station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi below station. Some regulation by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060), 12.2 mi upstream.

AVERAGE DISCHARGE.--88 years, 695 ft³/s, 503,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s Nov. 19, 1911, gage height, 10.0 ft, from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum observed, 83 ft³/s Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,260 ft³/s Jan. 8, gage height, 3.82 ft; minimum, 264 ft³/s Oct. 5, gage height, 1.04 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	429	447	360	1150	1000	689	443	523	393	401	571
2	347	411	507	350	1140	934	927	438	512	420	401	588
3	358	401	1230	470	1070	906	634	424	517	397	397	593
4	335	438	1270	600	927	955	496	424	512	385	393	588
5	309	472	1200	1500	906	634	565	438	512	372	393	582
6	372	491	1110	1470	543	538	472	472	507	372	389	582
7	343	462	1050	1690	804	640	462	472	507	376	385	549
8	376	438	1020	2020	610	851	457	486	452	367	380	397
9	385	424	997	1890	434	1170	452	496	512	355	397	393
10	376	415	990	2130	438	913	452	491	565	343	401	457
11	397	420	983	2220	477	997	677	482	543	343	447	496
12	438	411	997	2090	467	934	565	472	538	420	434	443
13	462	415	1060	1860	482	1000	538	467	528	588	411	424
14	533	401	1040	1670	491	1100	477	467	528	577	401	434
15	528	401	1000	1500	486	1090	523	491	538	857	401	517
16	538	434	798	1360	496	1080	477	472	523	604	401	517
17	554	593	948	1270	628	1070	472	452	429	512	401	512
18	538	571	927	1220	746	1060	588	452	406	477	401	549
19	533	582	785	1200	549	791	477	447	411	588	397	538
20	533	593	756	1190	634	538	482	443	452	523	393	523
21	512	533	727	1180	759	851	477	438	420	482	393	512
22	491	791	695	1170	892	486	462	438	401	462	393	507
23	434	878	677	1180	962	457	452	434	406	447	389	501
24	420	740	664	1180	997	443	457	434	406	438	393	496
25	420	554	438	1170	670	438	482	429	393	467	389	496
26	443	683	411	1170	646	438	467	452	389	467	385	496
27	397	467	740	1220	560	434	457	496	385	457	385	517
28	434	438	683	1190	733	438	452	496	363	462	385	496
29	533	582	565	1180	---	599	447	491	339	429	393	472
30	447	702	540	1170	---	588	447	501	358	415	462	447
31	434	---	370	1120	---	538	---	512	---	415	582	---
TOTAL	13640	15570	25625	40990	19697	23911	15482	14350	13875	14210	12573	15193
MEAN	440	519	827	1322	703	771	516	463	463	458	406	506
MAX	554	878	1270	2220	1150	1170	927	512	565	857	582	593
MIN	309	401	370	350	434	434	447	424	339	343	380	393
AC-FT	27050	30880	50830	81300	39070	47430	30710	28460	27520	28190	24940	30140

CAL YR 1982 TOTAL 267792 MEAN 734 MAX 3800 MIN 241 AC-FT 531200
WTR YR 1983 TOTAL 225116 MEAN 617 MAX 2220 MIN 309 AC-FT 446500

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1953 to current year.

INSTRUMENTATION.--Temperature recorder since August 1953.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.5°C July 27, 28, 1960, July 13, 1961; minimum, 1.0°C Dec. 31, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 15.5°C May 28, 29; minimum recorded, 3.5°C Dec. 27, 28, 30, 31.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.0	11.5	9.5	8.5	9.0	7.5	5.5	6.5	5.0	4.5	5.0
2	12.0	11.5	11.5	9.0	7.5	8.5	---	---	---	5.5	5.0	5.5
3	11.5	10.5	11.0	9.0	8.5	8.5	---	---	---	5.5	4.0	4.5
4	11.5	10.0	10.5	9.5	8.5	9.0	---	---	---	5.5	4.0	5.0
5	11.5	9.0	10.0	8.5	8.0	8.5	---	---	---	5.5	4.5	5.0
6	11.5	10.5	11.0	8.0	7.5	8.0	---	---	---	5.5	4.5	5.0
7	11.0	9.5	10.5	8.0	7.5	7.5	---	---	---	5.5	4.5	5.0
8	11.0	10.0	10.5	7.5	7.0	7.0	---	---	---	5.5	4.5	5.0
9	11.0	10.5	10.5	7.0	6.0	6.5	---	---	---	5.0	4.5	4.5
10	11.5	10.0	10.5	6.5	6.0	6.5	---	---	---	5.0	5.0	5.0
11	11.5	10.0	11.0	6.5	5.5	6.0	---	---	---	5.0	4.5	4.5
12	12.0	10.5	11.0	7.0	6.0	6.5	---	---	---	4.5	4.0	4.5
13	12.0	10.5	11.0	7.0	6.0	6.5	---	---	---	4.5	4.5	4.5
14	12.5	11.0	11.5	6.5	5.5	6.0	---	---	---	4.5	4.0	4.5
15	12.5	11.5	12.0	7.0	6.0	6.5	---	---	---	5.0	4.5	4.5
16	12.5	11.5	12.0	7.0	6.5	7.0	---	---	---	5.0	4.5	5.0
17	11.5	10.0	11.0	7.5	7.0	7.0	6.0	5.0	5.5	5.5	5.0	5.0
18	10.5	9.5	10.0	7.5	7.0	7.0	5.5	5.0	5.5	5.5	5.0	5.5
19	10.0	9.0	9.5	7.0	7.0	7.0	6.0	5.0	5.5	5.5	5.5	5.5
20	10.5	9.0	9.5	7.0	6.5	7.0	5.5	4.5	5.0	5.5	5.0	5.5
21	10.5	9.5	10.0	6.5	6.0	6.5	5.5	4.5	5.5	5.0	4.5	5.0
22	10.5	10.0	10.0	6.0	5.5	5.5	5.5	5.0	5.0	5.5	5.0	5.0
23	11.0	9.5	10.0	5.0	4.5	5.0	5.5	5.0	5.0	5.5	5.0	5.5
24	10.5	10.0	10.5	5.5	4.0	4.5	5.5	5.0	5.0	5.5	5.5	5.5
25	10.5	10.0	10.5	5.0	4.0	5.0	6.5	5.0	6.0	5.5	5.5	5.5
26	10.5	9.5	10.0	5.5	4.5	5.0	6.5	5.5	6.0	6.0	5.5	5.5
27	10.0	9.5	9.5	6.5	4.5	5.5	5.5	3.5	4.5	5.5	5.5	5.5
28	10.0	9.0	9.5	6.5	6.0	6.0	5.0	3.5	4.0	5.5	5.0	5.0
29	9.0	8.5	8.5	6.5	5.5	6.0	5.0	4.0	4.0	5.5	5.0	5.5
30	9.5	8.5	9.0	6.5	5.5	6.0	4.5	3.5	4.0	5.5	5.0	5.5
31	9.5	8.5	9.0	---	---	---	5.0	3.5	4.5	6.0	5.0	5.5
MONTH	12.5	8.5	10.5	9.5	4.0	6.5	---	---	---	6.0	4.0	5.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.0	5.0	6.5	6.0	6.0	8.0	7.5	7.5	10.0	9.5	9.5
2	5.5	5.0	5.0	7.0	6.0	6.5	8.0	7.0	7.5	10.0	9.5	9.5
3	6.0	5.0	5.0	7.5	6.0	6.5	8.5	7.0	7.5	10.5	9.5	10.0
4	5.5	5.0	5.0	7.5	6.5	6.5	9.5	7.5	8.5	12.0	9.0	11.0
5	6.0	4.5	5.0	8.0	6.5	7.5	9.5	7.0	8.0	10.0	9.5	9.5
6	7.0	5.0	6.5	8.5	7.5	8.0	10.0	7.5	8.5	11.0	9.5	10.0
7	6.5	5.0	5.5	8.0	7.0	7.5	9.0	8.0	8.5	10.0	9.0	9.5
8	7.5	5.0	6.0	8.0	6.5	7.0	9.0	7.5	8.5	9.5	9.0	9.5
9	8.0	7.0	7.5	7.5	6.5	7.0	8.5	7.5	8.0	10.5	8.5	9.5
10	8.0	7.5	8.0	8.0	7.0	7.5	8.0	7.5	7.5	10.5	9.0	9.5
11	8.0	7.5	7.5	7.0	6.5	7.0	8.0	7.5	7.5	11.5	8.5	10.0
12	8.0	7.5	8.0	8.0	6.5	7.0	9.0	7.0	8.0	12.5	9.0	10.5
13	8.0	7.5	7.5	7.0	6.5	7.0	9.5	7.0	8.0	12.5	9.0	10.5
14	7.5	7.0	7.5	7.0	6.5	6.5	10.0	7.0	8.5	10.5	9.5	10.0
15	7.5	7.0	7.5	7.0	6.5	6.5	10.0	7.5	8.5	10.0	9.0	9.5
16	8.0	7.5	7.5	7.5	6.5	6.5	10.5	7.5	9.0	11.0	9.5	10.0
17	8.0	6.5	7.5	7.5	6.5	7.0	11.0	8.0	9.5	10.0	9.5	10.0
18	7.0	6.0	6.5	7.5	6.5	7.0	10.5	8.5	9.5	11.5	9.5	10.5
19	7.5	6.0	7.0	8.0	6.5	7.5	11.0	8.5	9.5	12.5	9.0	10.5
20	7.5	6.0	7.0	9.0	6.5	8.0	10.0	9.0	9.5	13.0	9.5	11.0
21	7.0	6.0	6.5	8.0	7.0	7.5	10.5	9.0	9.5	12.0	10.0	11.0
22	7.5	6.0	6.5	9.0	7.0	8.0	10.0	8.5	9.0	13.5	9.5	11.5
23	8.0	6.0	6.5	9.0	8.0	8.5	10.0	9.0	9.5	13.5	10.0	11.5
24	7.5	6.0	6.5	9.0	7.5	8.0	10.0	9.0	9.5	14.0	10.0	11.5
25	8.0	6.0	7.0	9.0	8.0	8.5	10.0	8.0	9.0	13.5	10.5	11.5
26	7.5	7.0	7.5	9.0	7.5	8.5	10.5	9.0	9.5	13.5	10.5	11.5
27	8.0	7.0	7.5	8.5	8.0	8.5	11.5	8.5	10.0	14.0	10.5	12.0
28	7.5	6.0	7.0	9.5	8.0	8.0	11.0	8.5	10.0	15.5	11.5	13.0
29	---	---	---	8.0	7.5	8.0	12.0	9.0	10.0	15.5	12.0	13.5
30	---	---	---	9.0	7.5	8.0	11.5	9.0	10.0	12.5	12.0	12.5
31	---	---	---	9.0	7.5	8.0	---	---	---	12.5	12.0	12.0
MONTH	8.0	4.5	6.5	9.0	6.0	7.5	12.0	7.0	9.0	15.5	8.5	10.5

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	12.0	12.0	12.0	11.0	11.5	13.0	11.5	12.0	14.5	12.5	14.0
2	12.0	11.5	12.0	12.0	10.5	11.5	13.0	11.0	12.0	14.5	11.5	13.0
3	12.5	11.5	12.0	13.0	10.5	11.5	13.0	11.5	12.0	---	---	---
4	12.5	11.5	12.0	14.5	10.5	12.5	13.5	10.5	12.0	---	---	---
5	13.0	11.5	12.0	12.5	11.0	11.5	13.5	11.0	12.0	---	---	---
6	14.5	11.0	12.5	12.0	10.5	11.5	14.0	11.0	12.5	---	---	---
7	15.0	11.5	13.0	11.5	10.5	11.0	13.5	11.0	12.5	---	---	---
8	14.5	12.0	13.0	11.5	10.5	11.0	13.0	11.5	12.0	---	---	---
9	13.0	12.0	12.5	12.5	10.5	11.5	13.5	11.5	12.5	---	---	---
10	12.5	12.0	12.5	13.0	10.5	11.5	12.5	12.0	12.0	---	---	---
11	13.0	11.5	12.5	12.5	11.0	11.5	12.0	11.5	12.0	---	---	---
12	13.5	12.0	12.5	12.0	11.5	12.0	14.0	11.5	12.5	---	---	---
13	15.0	11.5	13.0	12.0	11.0	11.5	14.5	11.5	13.0	---	---	---
14	14.5	12.0	13.0	11.5	10.5	11.0	14.5	11.5	13.0	---	---	---
15	13.5	12.5	13.0	10.5	10.0	10.5	14.0	11.5	12.5	---	---	---
16	14.0	12.0	13.0	12.0	9.5	10.5	14.0	11.5	12.5	---	---	---
17	12.5	11.0	12.0	13.0	10.0	11.0	14.0	11.5	12.5	---	---	---
18	11.5	10.5	11.0	13.5	10.0	11.5	14.0	11.5	12.5	---	---	---
19	11.5	10.5	11.0	13.5	10.5	12.0	14.0	12.0	12.5	---	---	---
20	12.0	10.5	11.0	13.0	11.0	12.0	14.5	12.0	12.5	---	---	---
21	13.5	10.5	12.0	14.0	11.0	12.5	14.0	11.5	12.5	---	---	---
22	11.5	10.5	11.0	14.5	11.0	12.5	14.0	11.5	12.5	---	---	---
23	12.0	10.5	11.0	13.0	11.5	12.0	12.5	12.0	12.0	---	---	---
24	12.5	10.5	11.5	12.0	11.5	11.5	12.5	12.0	12.0	---	---	---
25	13.0	11.0	12.0	11.5	11.0	11.5	13.5	12.0	12.5	---	---	---
26	12.5	11.0	11.5	12.5	11.0	11.5	13.5	11.5	12.5	---	---	---
27	14.0	11.0	12.0	12.5	11.0	11.5	13.0	11.5	12.5	---	---	---
28	12.5	11.0	11.5	13.0	11.0	12.0	12.5	12.0	12.0	---	---	---
29	12.5	10.5	11.5	14.0	10.5	12.0	13.0	11.5	12.0	---	---	---
30	12.5	10.5	11.5	14.0	11.0	12.5	14.0	12.0	12.5	---	---	---
31	---	---	---	14.5	11.5	12.5	15.0	14.0	14.0	---	---	---
MONTH	15.0	10.5	12.0	14.5	9.5	11.5	15.0	10.5	12.5	---	---	---

12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW¼NW¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft downstream from bridge on Mill Avenue at Renton, and at mile 1.6.

DRAINAGE AREA.--184 mi^2, includes 3.67 mi^2 in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi^2 from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year.

REVISED RECORD.--WSP 1316: 1901-02. WSP 1932: Drainage area. WDR WA-75-1: 1972-74.

GAGE.--Water-stage recorder. Datum of gage is 15.20 ft National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1908, nonrecording gages within 1 mi of present site, at datum 10.67 ft National Vertical Datum of 1929. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft upstream at datum 20.13 ft National Geodetic Vertical Datum of 1929, and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow partly regulated by Chester Morse Lake and Masonry Dam for operation of powerplant at Cedar Falls 32.1 mi upstream from gage. An average daily discharge of about 167 ft^3/s was diverted during the year at Landsburg by the city of Seattle for municipal use.

AVERAGE DISCHARGE.--38 years (water years 1946-83), 689 ft^3/s, 499,200 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft^3/s Dec. 4, 1975, gage height, 14.14 ft from outside high-water mark; minimum daily, 30 ft^3/s July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,250 ft^3/s Jan. 8, gage height, 11.04 ft; minimum, 148 ft^3/s Aug. 9, gage height, 7.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	257	400	551	330	1130	1190	634	362	370	279	214	425
2	255	395	419	333	1120	1130	959	362	420	279	211	465
3	268	405	1220	436	1110	1070	770	358	415	258	205	435
4	275	440	1810	746	931	959	440	364	410	248	196	415
5	302	460	1490	2290	840	728	634	370	395	234	166	455
6	330	445	1330	2320	676	538	428	385	366	236	160	455
7	342	410	1060	2510	707	550	414	385	370	234	157	410
8	349	395	979	2900	688	682	415	395	370	217	155	314
9	367	375	932	2670	520	1260	401	400	370	178	155	272
10	375	380	926	2780	465	1170	400	385	425	166	169	283
11	398	395	979	2880	435	973	408	380	385	163	220	385
12	397	385	1010	2630	435	952	415	445	375	196	251	380
13	387	385	1070	2260	460	1100	370	410	370	322	227	354
14	408	380	1100	1940	538	1080	375	370	375	430	214	306
15	397	380	1080	1670	670	1040	380	420	375	634	220	330
16	398	410	1060	1370	676	1010	410	375	354	556	234	350
17	414	598	675	1250	763	988	395	405	318	346	230	350
18	399	640	670	1200	931	900	470	425	294	302	199	380
19	391	646	780	1200	819	800	400	410	298	302	166	410
20	388	688	680	1150	763	700	395	400	346	370	160	400
21	401	586	675	1120	903	600	390	400	318	286	163	375
22	411	707	670	1100	1040	586	360	405	283	262	163	380
23	374	826	635	1130	1220	480	375	410	294	234	166	375
24	364	688	645	1120	1300	450	390	390	286	230	169	385
25	367	544	495	1100	1090	435	400	380	286	248	163	385
26	401	538	415	1120	910	430	390	375	290	283	184	430
27	374	520	556	1280	826	430	385	375	286	269	187	440
28	429	415	666	1290	833	435	375	370	283	269	190	400
29	535	500	514	1190	---	592	366	375	286	269	205	390
30	424	604	482	1180	---	694	362	390	290	241	262	400
31	405	---	436	1120	---	616	---	385	---	220	390	---
TOTAL	11582	14940	26010	47615	22799	24568	13326	12061	10303	8761	6151	11534
MEAN	374	498	839	1536	814	793	444	389	343	283	198	384
MAX	535	826	1810	2900	1300	1260	959	445	425	634	390	465
MIN	255	375	415	330	435	430	362	358	283	163	155	272
AC-FT	22970	29630	51590	94440	45220	48730	26430	23920	20440	17380	12200	22880

CAL YR 1982 TOTAL 256221 MEAN 702 MAX 5090 MIN 105 AC-FT 508200
WTR YR 1983 TOTAL 209650 MEAN 574 MAX 2900 MIN 155 AC-FT 415800

12119000 CEDAR RIVER AT RENTON, WA

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-71, March 1978 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1965 to February 1967, March 1978 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C Aug. 8, 1978; minimum, 0.0°C Dec. 30, 1978 to Jan. 1, 1979, Jan. 29, 1980.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 19.5°C July 31, Aug. 6 ; minimum, 3.0°C Dec. 30, 31.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	10.0	12.0	10.0	9.5	10.0	7.0	6.0	7.0	4.0	3.5	3.5
2	13.0	12.0	12.5	9.0	8.5	9.0	7.0	7.0	7.0	4.5	4.0	4.5
3	12.5	11.5	12.0	9.5	9.0	9.5	7.5	7.0	7.5	5.5	4.5	5.0
4	12.0	10.5	11.5	10.0	9.5	9.5	7.5	6.5	7.0	5.5	5.0	5.0
5	12.0	9.5	11.0	9.5	9.0	9.0	6.0	6.0	6.0	5.5	5.5	5.5
6	11.5	11.0	11.0	9.5	8.5	9.0	6.0	6.0	6.0	5.5	5.0	5.5
7	11.5	10.5	11.0	8.5	8.0	8.0	6.0	5.0	5.5	6.0	5.5	5.5
8	11.5	10.5	11.0	8.0	7.0	7.5	5.0	4.5	5.0	6.0	5.5	6.0
9	12.5	11.0	12.0	7.5	6.0	6.5	4.5	4.5	4.5	5.5	5.5	5.5
10	12.0	10.5	11.0	6.5	5.5	6.0	5.0	4.5	4.5	6.0	5.5	5.5
11	12.0	10.5	11.5	6.5	5.5	6.0	4.5	4.5	4.5	6.0	5.5	5.5
12	12.0	11.0	11.5	6.0	6.0	6.0	5.0	4.5	4.5	5.0	4.5	5.0
13	12.0	11.0	11.5	6.5	6.0	6.5	5.5	5.0	5.0	5.0	4.5	5.0
14	12.0	11.0	11.5	6.0	5.5	6.0	5.5	5.5	5.5	5.0	4.5	4.5
15	12.0	11.0	11.5	7.0	5.5	6.0	6.0	5.5	5.5	4.5	4.5	4.5
16	12.0	11.5	12.0	7.5	7.0	7.0	6.5	6.0	6.0	5.0	4.5	5.0
17	11.5	10.5	11.0	7.5	7.5	7.5	6.5	6.0	6.5	6.0	5.0	5.5
18	10.0	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0	6.0	6.0	6.0
19	10.0	8.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0	6.0	6.0	6.0
20	10.0	8.5	9.0	7.5	7.0	7.0	6.0	5.5	6.0	6.0	6.0	6.0
21	10.5	10.0	10.0	7.0	6.5	6.5	5.5	5.5	5.5	6.0	5.0	5.0
22	11.0	10.5	10.5	6.5	5.0	5.5	5.5	5.5	5.5	5.5	5.0	5.0
23	11.5	10.5	11.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	5.5	5.5
24	11.5	10.5	11.0	5.0	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.0
25	11.0	11.0	11.0	5.0	4.5	5.0	6.0	5.5	5.5	6.0	6.0	6.0
26	11.0	10.5	11.0	6.0	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
27	10.5	10.0	10.5	6.5	6.0	6.0	5.5	4.0	5.0	6.0	6.0	6.0
28	10.5	10.0	10.5	7.0	6.5	6.5	4.0	4.0	4.0	6.0	5.5	5.5
29	10.0	9.5	10.0	7.0	7.0	7.0	4.0	3.5	3.5	6.0	5.5	6.0
30	9.5	8.5	9.0	6.5	6.5	6.5	3.5	3.0	3.5	6.0	6.0	6.0
31	9.5	9.5	9.5	---	---	---	3.5	3.0	3.0	6.0	5.5	6.0
MONTH	13.0	8.0	11.0	10.0	4.5	7.0	7.5	3.0	5.5	6.5	3.5	5.5

12119000 CEDAR RIVER AT RENTON, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	4.5	5.5	7.5	6.5	6.5	8.5	8.0	8.0	12.0	10.5	11.0
2	5.0	4.5	5.0	7.5	7.0	7.0	8.5	7.5	8.0	12.0	10.0	11.0
3	5.5	5.0	5.0	7.5	6.5	7.0	9.0	7.5	8.0	12.0	10.0	11.0
4	5.5	4.5	5.0	8.0	7.0	7.5	10.5	7.0	8.5	14.0	10.0	12.0
5	5.5	4.5	5.0	8.0	7.0	7.5	10.5	8.0	9.0	12.0	10.5	11.0
6	6.0	5.0	5.5	9.5	8.0	8.5	10.5	8.0	9.5	12.5	10.0	11.0
7	6.5	5.5	6.0	9.0	8.5	8.5	9.5	9.0	9.5	11.5	10.0	11.0
8	5.5	5.0	5.0	8.5	8.0	8.0	10.0	8.5	9.0	10.5	9.5	10.0
9	7.0	5.5	6.5	8.0	8.0	8.0	9.0	8.0	8.5	12.0	9.0	10.5
10	7.5	7.0	7.0	8.5	7.5	8.0	9.5	7.5	8.5	11.5	9.5	10.5
11	7.5	7.5	7.5	9.0	7.5	8.0	9.5	7.5	8.5	13.5	9.5	11.5
12	8.0	7.5	8.0	8.5	7.0	7.5	9.0	7.0	8.0	14.0	10.0	12.0
13	8.0	7.5	8.0	8.0	7.0	7.5	10.5	6.5	8.5	15.0	10.5	13.0
14	7.5	7.0	7.5	8.0	7.0	7.5	11.5	7.0	9.5	12.5	10.5	11.5
15	7.0	7.0	7.0	8.0	7.0	7.5	12.0	7.5	10.0	11.0	9.5	10.5
16	7.5	7.0	7.5	9.0	6.0	7.5	12.5	8.0	10.0	11.5	9.5	10.5
17	8.0	7.5	7.5	9.0	6.0	7.5	13.0	8.5	11.0	11.0	10.5	11.0
18	8.0	7.0	7.0	8.5	6.0	7.5	13.0	9.5	11.0	14.0	10.5	12.0
19	7.0	6.5	6.5	9.5	6.5	8.0	13.0	9.5	11.5	15.0	10.0	12.5
20	8.0	7.0	7.5	9.5	6.5	8.0	11.5	10.5	11.0	16.0	11.0	13.5
21	7.5	6.5	7.0	10.0	8.0	9.0	12.0	9.5	10.5	15.0	12.5	13.5
22	8.5	7.0	7.5	9.5	7.5	8.5	10.5	8.5	9.5	16.5	11.0	13.5
23	9.0	7.5	8.0	10.0	8.5	9.0	11.0	9.5	10.0	17.0	12.0	14.5
24	8.0	7.0	7.5	10.5	7.5	8.5	11.0	9.5	10.0	17.0	12.5	14.5
25	8.0	6.5	7.5	9.5	8.0	8.5	10.5	8.5	9.5	16.5	13.0	14.5
26	8.0	7.5	8.0	9.0	8.0	8.5	12.5	9.5	10.5	16.0	12.5	14.0
27	8.0	7.0	7.5	9.0	8.5	8.5	13.0	9.0	11.0	17.0	12.0	14.5
28	8.0	7.0	7.5	8.5	8.0	8.0	13.5	9.5	11.5	18.5	13.5	16.0
29	---	---	---	8.5	8.5	8.5	14.0	9.5	12.0	19.0	14.5	16.5
30	---	---	---	10.0	8.0	9.0	14.0	10.5	12.0	16.0	13.5	14.5
31	---	---	---	10.0	8.0	9.0	---	---	---	13.5	12.5	13.0
MONTH	9.0	4.5	7.0	10.5	6.0	8.0	14.0	6.5	9.5	19.0	9.0	12.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	12.0	12.5	14.0	13.0	13.5	17.0	15.0	16.0	15.5	15.0	15.0
2	12.5	12.0	12.0	16.0	12.5	14.0	17.5	14.0	16.0	15.5	14.5	15.0
3	14.0	12.0	13.0	16.0	12.5	14.0	18.0	14.5	16.0	14.5	14.5	14.5
4	13.5	12.0	12.5	18.5	12.5	15.5	17.5	13.5	16.0	15.0	14.5	14.5
5	15.5	12.0	13.5	16.5	14.5	15.0	18.5	14.5	16.5	15.0	14.0	14.5
6	17.0	12.0	14.5	15.0	12.5	14.0	19.5	14.5	17.0	14.5	13.0	13.5
7	17.5	13.0	15.5	13.5	12.5	13.0	18.0	15.0	17.0	14.5	13.0	13.5
8	17.5	14.0	15.5	14.0	12.5	13.0	17.5	15.5	16.5	13.5	12.5	13.0
9	15.0	13.5	14.0	17.0	12.5	14.5	18.5	15.0	17.0	13.5	12.5	13.0
10	15.0	13.0	14.0	17.0	13.5	15.5	16.5	15.0	16.0	13.5	12.5	12.5
11	15.0	12.5	13.5	17.0	14.5	16.0	15.5	13.5	14.5	13.5	12.0	13.0
12	15.5	12.5	13.5	16.0	15.0	15.0	17.5	13.0	15.0	14.0	12.0	13.0
13	16.5	12.0	14.5	15.0	13.5	14.5	18.5	14.5	16.5	14.5	12.5	13.5
14	15.5	13.5	14.5	13.5	12.5	13.0	18.5	15.0	17.0	14.5	13.5	14.0
15	16.0	13.5	14.5	13.0	11.5	12.0	18.0	15.0	16.5	14.0	12.5	13.0
16	14.5	12.5	14.0	14.5	11.5	13.0	17.5	14.0	15.5	13.5	13.0	13.0
17	14.5	13.5	14.0	16.5	12.5	14.5	17.5	14.0	16.0	13.0	12.5	13.0
18	14.5	12.5	13.5	17.5	12.5	15.0	18.0	14.5	16.5	13.0	12.0	12.5
19	14.0	12.0	13.0	16.0	13.5	14.5	18.0	14.5	16.0	12.0	10.5	11.5
20	15.0	12.0	13.5	16.0	13.5	14.5	17.0	14.0	16.0	12.5	10.5	11.5
21	17.0	11.5	14.5	18.0	13.0	15.5	18.0	14.0	16.0	13.0	11.0	12.0
22	14.5	13.0	13.5	18.5	14.0	16.5	18.5	14.5	16.5	13.5	12.0	12.5
23	13.5	12.0	12.5	17.5	14.5	16.0	16.5	14.5	15.0	13.5	12.0	12.5
24	14.5	12.0	13.5	15.5	14.5	15.0	15.0	14.0	14.5	13.0	12.5	12.5
25	16.0	13.0	14.5	14.5	13.5	14.0	17.5	14.0	15.5	13.5	12.5	12.5
26	17.0	13.5	15.0	15.5	13.0	14.5	17.0	14.0	15.5	13.5	12.5	12.5
27	18.0	13.0	15.5	16.0	12.5	14.5	16.0	14.5	15.0	12.5	11.5	12.0
28	15.5	13.5	14.5	17.0	13.5	15.0	15.5	14.5	14.5	11.5	10.0	11.0
29	16.0	13.5	14.5	18.0	13.5	15.5	16.0	14.0	15.0	11.0	9.5	10.5
30	15.5	12.5	14.0	19.0	14.0	16.5	16.0	14.5	15.0	11.0	9.5	10.5
31	---	---	---	19.5	15.0	17.0	15.5	14.0	14.5	---	---	---
MONTH	18.0	11.5	14.0	19.5	11.5	14.5	19.5	13.0	16.0	15.5	9.5	13.0
YEAR	19.5	3.0	10.5									

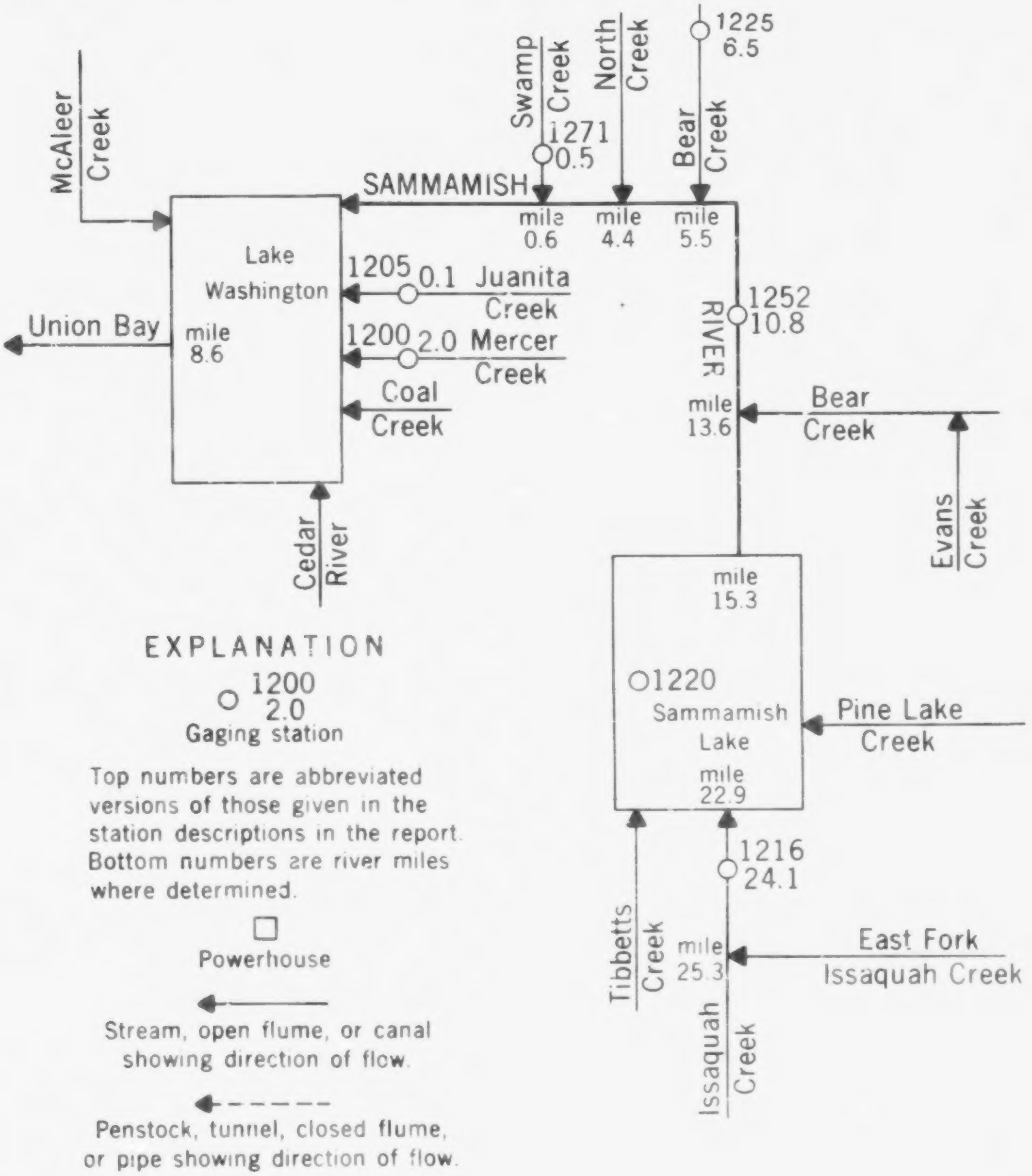
McAleer Creek
Swamp Creek
1271
0.5
North Creek
1225
6.5
Bear Creek
SAMMAMISH
mile 0.6
mile 4.4
mile 5.5
Lake Washington
mile 8.6
Union Bay
1205 0.1 Juanita Creek
1200 2.0 Mercer Creek
Coal Creek
1252
10.8
RIVER
mile 13.6
Bear Creek
Evans Creek
Cedar River
mile 15.3
1220
Sammamish Lake
mile 22.9
Pine Lake Creek
1216
24.1
Tibbetts Creek
mile 25.3
East Fork Issaquah Creek
Issaquah Creek
EXPLANATION
1200
2.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 14.—Gaging stations in Lake Washington basin (below Cedar River).

12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW¼NW¼ sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft upstream from Burlington Northern Railroad trestle, 1.2 mi southeast of Bellevue, and 2.0 mi upstream from mouth.

DRAINAGE AREA.--12.0 mi².

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 17.1' ft National Geodetic Vertical Datum of 1929 (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft downstream at different datums.

REMARKS.--Records good except those for periods of no gage-height record Oct. 1 to Dec. 3, Jan. 4-13, and July 9-14, which are poor. Natural flow affected by urbanization and construction of flood-control catchments.

AVERAGE DISCHARGE.--28 years, 22.7 ft³/s, 25.69 in/yr, 16,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 670 ft³/s Oct. 6, 1981, gage height, 5.58 ft; maximum gage height, 8.68 ft (2.646 m) Mar. 6, 1972 caused by backwater from plugged culvert; minimum discharge, 1.9 ft³/s Aug. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 170 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1645	*612	*5.32	Jan. 27	1400	208	3.02
Dec. 16	0930	261	3.42	June 10	0830	205	2.99
Jan. 5	unknown	520	4.89	Aug. 30	0515	224	3.15

Minimum discharge, 7.2 ft³/s Aug. 21, gage height, 0.23 ft.

REVISIONS.--The maximum (*) and supplemental peak discharges above base of 170 ft³/s for some water years have been revised, as shown in the following table. These figures supersede those published in the reports for 1977-79.

Date	Discharge (ft³/s)	Gage height (ft)	Date	Discharge (ft³/s)	Gage height (ft)
1977:					
Mar. 9	*264	*3.44	Aug. 26	248	3.33
1978:					
Nov. 25	233	3.22	Dec. 15	258	3.40
Dec. 11	345	3.97	Sept. 22	*400	*4.28
1979:					
Nov. 4	*466	*4.62	Jan. 21	a173	2.70
Nov. 29	a172	2.70	Feb. 12	218	3.10
Dec. 1	a176	2.74			

a Not previously published.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	24	49	16	18	28	53	12	14	13	8.7	52
2	13	21	43	30	18	28	38	14	12	12	8.7	33
3	14	21	350	57	17	23	23	14	11	9.9	8.7	13
4	14	27	127	110	16	20	20	12	11	8.7	8.7	15
5	13	32	42	220	16	37	18	24	10	8.7	8.5	13
6	14	30	52	150	25	40	17	20	11	9.0	8.5	11
7	15	28	32	110	20	46	17	26	10	9.0	8.5	11
8	18	25	25	130	16	74	18	31	10	13	8.7	11
9	15	23	22	80	63	78	17	26	10	11	8.7	14
10	15	23	20	50	36	52	19	14	76	9.5	9.0	40
11	14	22	19	30	35	31	24	13	13	8.9	37	18
12	14	21	46	31	57	34	16	13	17	15	15	12
13	14	21	34	22	37	30	15	12	11	35	9.9	11
14	14	20	56	22	30	26	14	15	10	28	9.2	9.9
15	14	21	70	19	30	21	14	41	9.9	24	9.4	9.9
16	14	30	145	19	35	20	14	15	9.9	11	9.4	12
17	16	52	79	20	90	19	14	14	29	11	9.7	9.9
18	15	50	50	25	44	18	14	13	12	11	9.0	55
19	14	46	47	45	30	17	14	12	10	9.3	8.2	16
20	15	45	55	27	48	16	15	12	11	9.2	8.2	12
21	16	41	57	20	30	16	14	11	9.7	9.0	8.0	11
22	24	35	57	22	41	22	14	11	14	8.5	8.5	10
23	22	32	30	31	67	17	13	11	13	8.5	9.2	9.9
24	18	30	25	37	60	16	16	11	10	8.2	9.4	9.9
25	22	28	24	24	37	15	13	11	9.4	17	9.2	9.7
26	20	27	29	44	37	17	13	11	9.4	14	9.0	14
27	21	29	20	85	26	22	12	11	9.2	20	8.2	16
28	30	37	19	33	25	75	12	10	9.0	14	16	11
29	50	42	19	25	---	56	12	10	9.1	9.9	22	9.9
30	35	47	17	24	---	58	12	10	10	9.2	88	9.9
31	27	---	17	20	---	30	---	16	---	8.7	14	---
TOTAL	575	930	1735	1576	1005	952	525	476	411.2	393.2	413.2	490.0
MEAN	18.5	31.0	56.0	50.8	35.9	30.7	17.5	15.4	13.7	12.7	13.3	16.3
MAX	50	52	350	220	90	78	53	41	76	35	88	55
MIN	13	20	17	16	16	15	12	10	9.0	8.2	8.0	9.7
CFSM	1.54	2.58	4.67	4.23	2.99	2.55	1.46	1.28	1.14	1.06	1.11	1.36
IN.	1.78	2.88	5.38	4.89	3.12	2.95	1.63	1.48	1.27	1.22	1.28	1.52
AC-FT	1140	1840	3440	3130	1990	1890	1040	944	816	780	820	972

CAL YR 1982 TOTAL 9945.9 MEAN 27.2 MAX 350 MIN 7.2 CFSM 2.27 IN. 30.83 AC-FT 19730
WTR YR 1983 TOTAL 9481.6 MEAN 26.0 MAX 350 MIN 8.0 CFSM 2.17 IN. 29.39 AC-FT 18810

12120500 JUANITA CREEK NEAR KIRKLAND, WA

LOCATION.--Lat 47°42'20", long 122°12'56", in SW¼SE¼ sec.30, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 0.1 mi upstream from mouth and Lake Washington, and 1.7 mi north of Kirkland.

DRAINAGE AREA.--6.69 mi². Prior to May 3, 1972, 6.43 mi².

PERIOD OF RECORD.--June to October 1945, September 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft, from topographic map. Prior to Oct. 2, 1945, water-stage recorder at site 1,500 ft upstream at different datum. Sept. 1, 1963, to May 2, 1972, water-stage recorder and concrete control at site 1,000 ft upstream at different datum. May 3, 1972, to Oct. 27, 1972, nonrecording gage at present site and different datum.

REMARKS.--Records poor. Retention ponds in basin may cause minor regulation. Probably several small diversions above station for domestic use.

AVERAGE DISCHARGE.--18 years (water years 1964-72, 1975-83), 11.2 ft³/s, 22.73 in/yr, 8,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 326 ft³/s Oct. 6, 1981; maximum gage height, 6.75 ft Dec. 3, 1982, backwater from debris; minimum discharge, 0.58 ft³/s Sept. 13, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 315 ft³/s Dec. 3, gage height, 6.75 ft with backwater from debris; minimum daily discharge, 2.9 ft³/s Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	5.6	32	9.9	14	16	31	11	6.2	9.0	4.1	28
2	9.9	5.3	28	19	13	15	26	17	5.8	16	3.8	18
3	5.6	5.0	164	21	13	12	17	16	5.4	12	3.7	7.4
4	4.2	19	63	76	12	11	17	15	5.0	9.6	3.6	6.2
5	3.7	16	33	181	12	19	16	41	4.8	8.0	3.6	5.0
6	14	12	53	70	12	18	15	36	4.6	6.6	3.6	4.7
7	8.8	8.8	19	43	11	23	21	36	4.4	5.6	3.5	4.4
8	5.6	7.4	11	44	10	36	18	22	4.3	5.0	3.5	7.7
9	4.4	6.8	8.1	27	26	50	17	11	4.2	4.5	3.5	5.9
10	3.9	6.5	7.1	22	21	40	17	8.4	32	4.1	3.4	12
11	3.7	6.2	7.1	19	23	28	19	7.1	8.8	3.8	26	6.5
12	3.4	5.9	38	17	33	37	15	6.5	6.4	7.0	6.5	5.3
13	3.4	5.9	28	15	23	27	14	6.2	5.4	12	4.7	4.7
14	3.2	5.9	40	14	17	17	13	10	4.8	17	4.2	4.4
15	3.2	5.9	57	14	17	13	12	17	4.4	17	4.2	4.7
16	11	11	100	14	17	11	12	8.1	4.2	5.9	3.9	5.0
17	5.6	94	62	13	47	11	10	7.4	5.4	5.0	3.9	4.4
18	4.2	49	37	15	28	9.9	7.4	6.8	7.0	4.5	3.9	26
19	3.7	67	26	24	18	9.5	7.1	6.5	9.0	4.3	3.7	11
20	3.4	35	54	13	27	9.2	8.1	6.2	11	4.2	3.7	7.7
21	9.2	29	32	11	19	8.8	7.1	5.9	9.5	4.1	3.4	5.9
22	23	19	33	14	26	9.5	7.1	5.4	8.8	4.0	3.4	4.7
23	7.1	17	20	17	38	8.8	7.1	5.2	10	4.0	3.4	4.4
24	5.0	15	16	21	33	8.4	8.4	5.0	14	5.4	3.4	4.2
25	9.2	15	17	15	22	9.2	7.1	4.7	12	13	3.4	4.2
26	17	17	18	25	19	8.8	6.8	4.5	9.2	7.7	3.4	4.7
27	5.9	20	14	52	14	9.2	6.8	4.3	8.1	11	3.4	4.7
28	26	36	12	29	14	14	6.8	4.2	7.1	6.8	7.7	4.2
29	19	52	12	20	---	23	6.8	4.1	6.2	5.8	12	4.2
30	8.8	46	11	17	---	21	6.8	4.1	5.8	5.2	36	3.9
31	6.2	---	10	15	---	12	---	5.0	---	4.5	7.7	---
TOTAL	245.7	644.2	1062.3	906.9	579	545.3	383.4	347.6	233.8	232.6	188.2	224.1
MEAN	7.93	21.5	34.3	29.3	20.7	17.6	12.8	11.2	7.79	7.50	6.07	7.47
MAX	26	94	164	181	47	50	31	41	32	17	36	28
MIN	3.2	5.0	7.1	9.9	10	8.4	6.8	4.1	4.2	3.8	3.4	3.9
CFSM	1.19	3.21	5.13	4.38	3.09	2.63	1.91	1.67	1.16	1.12	.91	1.12
IN.	1.37	3.58	5.91	5.04	3.22	3.03	2.13	1.93	1.30	1.29	1.05	1.25
AC-FT	487	1280	2110	1800	1150	1080	760	689	464	461	373	445

CAL YR 1982 TOTAL 5441.4 MEAN 14.9 MAX 164 MIN 2.7 CFSM 2.23 IN. 30.26 AC-FT 10790
WTR YR 1983 TOTAL 5593.1 MEAN 15.3 MAX 181 MIN 3.2 CFSM 2.29 IN. 31.10 AC-FT 11090

12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'48", in SE¼NW¼ sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft downstream from S.E. 56th Street bridge, 0.7 mi downstream from North Fork, 1.2 mi upstream from mouth, and 1.6 mi northwest of Issaquah.

DRAINAGE AREA.--56.6 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year. Chemical analyses 1965-71, 1974, 1976; water temperatures September 1970 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft, from topographic map.

REMARKS.--Records good. Many minor diversions for irrigation and domestic use above station.

AVERAGE DISCHARGE.--20 years, 143 ft³/s, 34.31 in/yr, 103,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft³/s Dec. 3, 1975, gage height, 11.46 ft; minimum, 14 ft³/s Oct. 12, 1979; minimum gage height, 2.34 ft Sept. 21, 22, 29, 30, Oct. 12, 13, 16, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2145	1,450	9.18	Jan. 5	1530	*2,110	*11.18

Minimum discharge, 29 ft³/s Aug. 26-28, gage height, 3.36 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	73	168	113	141	177	200	70	48	59	46	103
2	42	65	133	129	134	170	240	70	47	67	45	113
3	49	59	834	173	127	156	210	68	45	57	44	70
4	45	78	934	508	116	147	174	67	44	52	42	60
5	40	99	483	1740	113	138	157	73	43	47	40	51
6	54	107	384	1230	125	160	145	85	41	46	37	47
7	58	96	275	970	133	160	139	85	40	47	36	53
8	47	82	220	1050	115	176	135	87	40	49	35	45
9	53	70	187	705	131	310	132	95	40	50	34	43
10	49	60	164	726	144	478	132	80	84	45	34	65
11	46	53	145	555	142	449	128	74	67	44	65	106
12	44	51	169	422	144	355	120	70	55	73	69	71
13	38	49	220	312	180	306	113	68	45	173	47	62
14	38	47	219	252	192	252	108	67	43	150	41	56
15	38	46	232	212	172	213	103	117	43	160	38	49
16	46	68	341	186	177	188	99	85	42	122	37	45
17	63	260	377	172	194	174	98	71	52	97	36	44
18	54	237	384	159	192	162	93	67	59	95	35	67
19	50	286	418	175	166	152	90	63	65	77	33	69
20	47	297	376	152	178	142	93	59	75	70	32	54
21	51	191	361	141	166	130	91	54	66	65	31	46
22	82	142	297	136	168	150	87	52	60	59	31	43
23	79	117	245	168	217	130	85	49	73	55	30	42
24	62	100	204	164	272	120	91	46	75	54	31	42
25	59	91	183	150	291	115	85	44	67	61	31	42
26	79	84	193	166	272	115	85	43	62	67	30	43
27	63	85	170	278	232	120	81	43	58	63	30	54
28	89	119	153	236	196	130	77	42	56	66	31	48
29	161	126	146	188	---	260	74	39	56	56	38	44
30	90	146	149	174	---	320	73	39	56	50	68	43
31	70	---	122	156	---	250	---	43	---	47	42	---
TOTAL	1824	3384	8886	11898	4832	6305	3538	2015	1647	2223	1219	1720
MEAN	58.8	113	287	384	173	203	118	65.0	54.9	71.7	39.3	57.3
MAX	161	297	934	1740	291	478	240	117	84	173	69	113
MIN	38	46	122	113	113	115	73	39	40	44	30	42
CFSM	1.04	2.00	5.07	6.78	3.06	3.59	2.08	1.15	.97	1.27	.69	1.01
IN.	1.20	2.22	5.84	7.82	3.18	4.14	2.33	1.32	1.08	1.46	.80	1.13
AC-FT	3620	6710	17630	23600	9580	12510	7020	4000	3270	4410	2420	3410

CAL YR 1982 TOTAL 59807 MEAN 164 MAX 1450 MIN 25 CFSM 2.90 IN. 39.31 AC-FT 118600
WTR YR 1983 TOTAL 49491 MEAN 136 MAX 1740 MIN 30 CFSM 2.40 IN. 32.53 AC-FT 98170

12122000 SAMMAMISH LAKE NEAR REDMOND, WA

LOCATION.--Lat 47°34'47", long 122°06'38", in NE¼SW¼ sec.12, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on west shore 5.5 mi above lake outlet, and 6.5 mi south of Redmond.

DRAINAGE AREA.--99.6 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek, which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1939 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 24.04 ft National Geodetic Vertical Datum of 1929. Prior to June 22, 1942, nonrecording gage at different site at datum 1.00 ft higher. June 22, 1942, to Aug. 22, 1951, nonrecording gage at different site at datum 1.00 ft higher and Aug. 23, 1951, to Apr. 29, 1965, at present datum.

REMARKS.--Minor regulation on tributaries. Many small diversions from tributaries for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.40 ft Feb. 12, 1951 (present datum); minimum observed, 1.09 ft Aug. 25-27, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 10.83 ft, present datum, was observed on Dec. 22, 1933, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.84 ft Jan. 9; minimum, 1.69 ft Aug. 28.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.79	2.13	2.57	2.86	3.01	3.02	2.82	2.18	1.94	1.92	1.99	1.91
2	1.80	2.12	2.56	2.81	2.96	3.00	2.87	2.16	1.93	1.91	1.97	1.97
3	1.82	2.11	2.85	2.81	2.90	2.95	2.87	2.14	1.92	1.91	1.96	1.98
4	1.82	2.13	3.37	2.92	2.84	2.91	2.86	2.13	1.91	1.90	1.94	1.98
5	1.81	2.15	3.50	3.64	2.79	2.87	2.84	2.12	1.90	1.89	1.93	1.97
6	1.82	2.17	3.56	4.27	2.75	2.88	2.81	2.13	1.89	1.88	1.92	1.96
7	1.85	2.16	3.53	4.52	2.74	2.87	2.78	2.14	1.88	1.86	1.91	1.95
8	1.86	2.15	3.47	4.73	2.70	2.91	2.75	2.16	1.87	1.86	1.89	1.94
9	1.86	2.14	3.38	4.77	2.71	3.04	2.71	2.18	1.85	1.86	1.88	1.95
10	1.86	2.13	3.30	4.71	2.73	3.16	2.68	2.17	1.92	1.85	1.87	1.97
11	1.85	2.11	3.21	4.64	2.72	3.21	2.66	2.15	1.95	1.84	1.89	2.00
12	1.84	2.09	3.17	4.48	2.74	3.22	2.63	2.14	1.98	1.87	1.93	2.01
13	1.84	2.08	3.15	4.31	2.76	3.21	2.60	2.12	1.97	1.88	1.92	2.00
14	1.83	2.06	3.14	4.14	2.77	3.17	2.56	2.10	1.96	1.96	1.91	2.00
15	1.82	2.04	3.16	3.97	2.77	3.13	2.53	2.15	1.95	2.04	1.90	1.98
16	1.82	2.06	3.27	3.82	2.78	3.07	2.50	2.15	1.94	2.07	1.88	1.97
17	1.86	2.24	3.35	3.68	2.83	3.01	2.47	2.13	1.95	2.08	1.86	1.96
18	1.87	2.37	3.43	3.55	2.88	2.95	2.43	2.12	1.94	2.10	1.85	2.00
19	1.86	2.48	3.48	3.49	2.87	2.90	2.41	2.11	1.94	2.09	1.83	2.02
20	1.84	2.58	3.51	3.40	2.89	2.84	2.39	2.09	1.94	2.07	1.81	2.01
21	1.84	2.62	3.54	3.30	2.88	2.79	2.38	2.08	1.94	2.07	1.79	1.99
22	1.92	2.61	3.54	3.21	2.89	2.75	2.34	2.07	1.94	2.06	1.78	1.98
23	1.93	2.59	3.49	3.16	2.94	2.72	2.33	2.06	1.95	2.04	1.76	1.97
24	1.93	2.55	3.42	3.13	2.99	2.67	2.30	2.05	1.95	2.02	1.74	1.95
25	1.94	2.51	3.34	3.09	3.04	2.63	2.29	2.03	1.94	2.02	1.73	1.94
26	1.97	2.48	3.29	3.06	3.08	2.58	2.27	2.01	1.95	2.03	1.72	1.94
27	1.99	2.45	3.22	3.10	3.07	2.57	2.26	1.99	1.94	2.03	1.71	1.95
28	2.02	2.48	3.14	3.15	3.05	2.50	2.24	1.98	1.93	2.05	1.71	1.93
29	2.12	2.51	3.07	3.13	---	2.62	2.22	1.96	1.92	2.04	1.74	1.92
30	2.13	2.54	3.00	3.10	---	2.72	2.20	1.95	1.92	2.02	1.86	1.90
31	2.12	---	2.93	3.06	---	2.79	---	1.94	---	2.01	1.86	---
MEAN	1.89	2.29	3.26	3.61	2.86	2.89	2.53	2.09	1.93	1.98	1.85	1.97
MAX	2.13	2.62	3.56	4.77	3.08	3.22	2.87	2.18	1.98	2.10	1.99	2.02
MIN	1.79	2.04	2.56	2.81	2.70	2.50	2.20	1.94	1.85	1.84	1.71	1.90

WTR YR 1983 MEAN 2.43 MAX 4.77 MIN 1.71

12122500 BEAR CREEK NEAR REDMOND, WA

LOCATION.--Lat 47°43'04", long 122°04'34", in NW¼NW¼ sec.29, T.26 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank, 1.0 mi upstream from Cottage Lake Creek and 3.5 mi northeast of Redmond, and at mile 6.5.

DRAINAGE AREA.--13.9 mi².

PERIOD OF RECORD.--June 1945 to October 1949, May 1979 to September 1981; October 1981 to current year (seasonal records only).

REVISED RECORD.--WRD WA-79-1: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft, from topographic map. June 1945 to October 1949 at different datum.

REMARKS.--Records fair except for periods of no gage-height record June 1 to July 15, Sept. 14 to Oct. 31, which were poor. No known diversion or regulation.

AVERAGE DISCHARGE.--6 years (water years 1946-49, 1980-81), 27.8 ft³/s, 17,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 223 ft³/s Dec. 17, 1979, gage height, 3.63 ft, maximum gage height, 3.89 ft Feb. 22, 1949 at datum then in use; minimum discharge, 3.1 ft³/s Aug. 22, 1946, gage height, 1.34 ft at datum then in use; minimum gage height, 1.00 ft Aug. 19, 1983.

EXTREMES FOR CURRENT YEAR.--

JUNE TO OCTOBER 1982.--Maximum discharge, 47 ft³/s Oct. 29; minimum daily, 6.4 ft³/s on several days in August and September.

JUNE TO OCTOBER 1983.--Maximum discharge, 32 ft³/s Aug. 30, gage height, 1.63 ft; minimum, 6.3 ft³/s Aug. 19, gage height, 1.00 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	12	11	7.9	6.6	11
2	12	9.9	7.6	6.4	12
3	12	18	8.1	6.6	14
4	12	14	7.4	7.9	13
5	13	12	6.9	7.9	12
6	13	11	6.9	6.9	14
7	13	10	6.4	6.6	17
8	12	9.4	6.4	6.4	14
9	11	9.1	6.6	13	15
10	11	8.9	7.6	14	14
11	11	8.6	7.4	15	13
12	11	8.4	7.1	14	13
13	11	8.1	14	13	11
14	11	13	12	11	11
15	11	10	8.9	10	11
16	9.9	10	7.9	9.4	13
17	9.4	10	7.4	8.8	18
18	9.4	9.3	7.1	8.0	16
19	9.1	8.8	7.1	7.6	14
20	8.9	8.8	6.9	7.6	14
21	8.6	9.0	6.9	7.9	15
22	8.4	9.0	6.6	7.9	24
23	8.4	8.5	6.6	8.2	23
24	8.1	8.2	6.4	8.9	18
25	8.1	7.6	6.4	9.8	17
26	8.9	7.1	6.4	10	23
27	9.4	7.1	6.6	11	18
28	9.7	7.1	6.4	15	26
29	9.1	7.4	6.4	14	47
30	11	7.6	7.4	13	26
31	---	7.9	6.9	---	20
TOTAL	312.4	294.8	230.6	292.4	527
MEAN	10.4	9.51	7.44	9.75	17.0
MAX	13	18	14	15	47
MIN	8.1	7.1	6.4	6.4	11
AC-FT	620	585	457	580	1050

12122500 BEAR CREEK NEAR REDMOND, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	12	13	8.8	20	11
2	13	13	8.5	23	11
3	13	12	8.2	18	10
4	12	11	7.9	15	12
5	12	11	7.9	14	11
6	12	11	7.6	13	12
7	11	10	7.9	12	12
8	11	10	7.9	12	11
9	12	9.8	7.6	12	10
10	19	9.6	7.3	15	11
11	17	9.5	13	16	10
12	18	11	13	14	10
13	16	15	10	13	11
14	15	20	9.3	12	10
15	13	22	8.5	12	10
16	14	17	7.6	12	10
17	18	16	7.1	14	11
18	17	16	6.8	17	11
19	16	14	6.8	20	10
20	15	13	7.1	16	11
21	15	12	7.1	14	12
22	14	11	7.6	14	12
23	15	9.9	9.6	13	11
24	14	9.6	9.0	13	11
25	14	9.3	8.5	12	11
26	13	9.3	8.2	12	12
27	13	9.3	7.9	14	13
28	12	9.9	8.8	13	14
29	12	9.6	9.9	12	12
30	12	9.3	21	11	13
31	---	9.0	16	---	14
TOTAL	420	372.1	282.4	428	350
MEAN	14.0	12.0	9.11	14.3	11.3
MAX	19	22	21	23	14
MIN	11	9.0	6.8	11	10
AC-FT	833	738	560	849	694

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW¼SW¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi upstream from Bear Creek, 3.6 mi southeast of Woodinville, and at mile 10.8.

DRAINAGE AREA.--159 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which is normally diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1965 to current year. Water temperatures August 1965 to February 1967.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi downstream from base gage at same datum.

REMARKS.--Records fair. Natural regulation from Sammamish Lake and some minor regulation. Many small diversions for irrigation and domestic use.

AVERAGE DISCHARGE.--18 years, 328 ft³/s, 28.01 in/yr, 237,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s Mar. 6, 1972, elevation, 25.83 ft; minimum daily, 25 ft³/s Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,720 ft³/s Jan. 5, elevation, 23.29 ft; minimum daily, 39 ft³/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	206	322	374	502	530	441	169	119	113	106	144
2	105	192	322	370	468	524	491	169	118	118	104	161
3	113	182	400	410	436	491	442	167	114	114	97	130
4	101	206	620	570	414	462	414	162	110	106	90	120
5	96	220	675	1390	391	452	390	173	107	99	76	105
6	122	216	695	1670	382	489	372	183	106	97	72	99
7	132	206	670	1580	388	485	370	184	105	97	74	94
8	125	193	648	1580	365	567	361	196	105	96	72	89
9	115	184	594	1490	425	694	348	193	105	97	67	107
10	118	176	538	1390	425	707	339	179	154	90	63	126
11	109	171	494	1290	428	670	350	173	134	88	99	138
12	104	167	506	1170	476	654	323	166	139	102	104	112
13	103	162	548	1070	472	645	306	161	126	120	88	104
14	101	154	548	958	455	605	290	161	122	121	90	98
15	101	154	616	867	438	560	273	196	122	145	84	95
16	110	167	847	790	459	525	260	180	118	140	75	95
17	139	370	832	734	560	493	248	171	136	138	70	96
18	122	424	801	694	605	457	238	167	125	145	66	144
19	110	444	766	704	546	427	228	158	125	139	60	150
20	106	472	823	654	577	399	224	153	122	137	56	122
21	116	442	832	606	546	378	217	147	118	128	53	112
22	187	388	786	568	558	374	210	143	116	125	51	106
23	167	356	704	578	635	361	204	139	125	120	51	103
24	150	334	638	576	647	341	202	136	121	118	48	100
25	148	313	590	556	623	321	197	133	115	121	45	98
26	187	300	572	566	622	305	192	128	112	130	41	96
27	166	294	528	668	580	299	187	122	109	134	39	99
28	190	291	492	668	549	298	184	119	107	142	45	95
29	252	302	462	612	---	366	180	114	108	128	55	93
30	211	311	430	574	---	450	174	114	110	120	143	91
31	195	---	398	536	---	431	---	114	---	113	98	---
TOTAL	4194	7997	18697	26263	13972	14760	8655	4870	3553	3681	2282	3322
MEAN	135	267	603	847	499	476	289	157	118	119	73.6	111
MAX	252	472	847	1670	647	707	491	196	154	145	143	161
MIN	93	154	322	370	365	298	174	114	105	88	39	89
CFSM	.85	1.68	3.79	5.33	3.14	2.99	1.82	.99	.74	.75	.46	.70
IN.	.98	1.87	4.37	6.14	3.27	3.45	2.02	1.14	.83	.86	.53	.78
AC-FT	8320	15860	37090	52090	27710	29280	17170	9660	7050	7300	4530	6590

CAL YR 1982 TOTAL 132161 MEAN 362 MAX 1740 MIN 46 CFSM 2.28 IN. 30.92 AC-FT 262100
WTR YR 1983 TOTAL 112246 MEAN 308 MAX 1670 MIN 39 CFSM 1.94 IN. 26.26 AC-FT 222600

12127100 SWAMP CREEK AT KENMORE, WA

LOCATION.--Lat 47°45'22", long 122°13'57", in NE¼ sec.12, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on right bank on upstream side of Bothell Way bridge (State Highway 522) at Kenmore, and at mile 0.5.

DRAINAGE AREA.--23.1 mi².

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 14.46 ft National Geodetic Vertical Datum of 1929 (Washington State Highway Department). Apr. 27 to Sept. 7, 1967, nonrecording gage at same site and datum.

REMARKS.--Records good except for periods of no gage-height record, Oct. 20 to Dec. 3, May 24 to July 14, and flows above 150 ft³/s, which are poor. Some minor diversion for domestic use upstream from station. No regulation.

AVERAGE DISCHARGE.--18 years (water years 1964-72, 1975-83), 34.7 ft³/s, 20.40 in/yr, 25,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 487 ft³/s Mar. 5, 1972, maximum gage height, 6.12 ft Jan. 5, 1983; minimum, 2.3 ft³/s Aug. 12, 1977; minimum gage height, 1.71 ft July 31, Aug. 1, 2, 1965, Aug. 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2000	462	5.90	Dec. 20	1600	294	4.28
Dec. 16	0945	353	5.01	Jan. 5	1445	*484	*6.12

Minimum discharge, 5.4 ft³/s Aug. 20, 21, gage height, 1.93 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	19	36	27	45	68	84	11	12	12	12	36
2	22	17	34	39	40	71	90	11	10	10	15	43
3	21	16	350	60	36	59	52	11	9.5	8.0	8.2	16
4	14	19	221	123	33	50	40	11	11	7.7	7.6	13
5	11	26	107	337	30	57	34	21	9.2	7.3	7.0	11
6	81	23	165	254	36	73	31	24	10	8.3	7.9	9.7
7	20	20	93	167	36	75	30	24	8.6	7.9	7.8	9.3
8	16	18	68	153	30	86	29	27	8.4	11	7.7	8.7
9	14	17	53	109	91	145	28	21	9.1	9.4	7.5	11
10	13	19	43	85	70	118	27	16	58	8.1	8.0	12
11	12	17	36	68	123	83	69	13	12	7.0	29	13
12	11	16	86	57	174	77	33	12	14	9.8	22	9.4
13	11	16	95	50	134	93	27	11	10	100	25	8.6
14	11	15	101	43	92	84	24	18	9.0	30	20	8.1
15	10	19	163	39	78	59	22	98	8.9	18	19	8.0
16	18	28	298	36	86	49	21	32	8.8	12	22	8.2
17	11	50	185	33	142	43	19	23	29	9.7	15	8.0
18	11	47	157	41	134	37	18	20	13	11	6.5	38
19	12	42	131	73	102	33	18	16	10	9.8	6.3	20
20	13	35	183	50	137	30	18	14	11	9.6	6.2	11
21	17	31	165	43	98	26	18	13	9.6	8.9	6.1	10
22	21	28	155	40	111	29	17	12	14	8.7	6.2	9.2
23	14	25	100	54	170	27	16	11	12	8.4	6.3	8.7
24	13	23	73	71	147	24	18	10	9.0	8.5	6.5	8.5
25	16	21	63	68	113	23	16	10	8.0	8.9	6.4	8.5
26	15	19	65	102	103	23	15	9.6	8.4	10	6.2	8.5
27	18	23	48	167	77	27	14	9.4	8.1	12	6.1	9.4
28	25	27	41	123	68	28	13	9.1	7.8	14	8.3	8.4
29	43	28	36	86	---	73	12	8.9	8.6	17	14	8.1
30	28	31	31	68	---	65	12	8.6	8.3	7.3	49	8.1
31	21	---	29	54	---	47	---	15	---	6.9	13	---
TOTAL	574	735	3411	2720	2536	1784	865	550.6	365.3	417.2	387.8	389.4
MEAN	18.5	24.5	110	87.7	90.6	57.5	28.8	17.8	12.2	13.5	12.5	13.0
MAX	81	50	350	337	174	145	90	98	58	100	49	43
MIN	10	15	29	27	30	23	12	8.6	7.8	6.9	6.1	8.0
CFSM	.80	1.06	4.76	3.80	3.92	2.49	1.25	.77	.53	.58	.54	.56
IN.	.92	1.18	5.49	4.38	4.08	2.87	1.39	.89	.59	.67	.62	.63
AC-FT	1140	1460	6770	5400	5030	3540	1720	1090	725	828	769	772

CAL YR 1982 TOTAL 15670.2 MEAN 42.9 MAX 350 MIN 5.9 CFSM 1.86 IN. 25.24 AC-FT 31080
WTR YR 1983 TOTAL 14735.3 MEAN 40.4 MAX 350 MIN 6.1 CFSM 1.75 IN. 23.73 AC-FT 29230

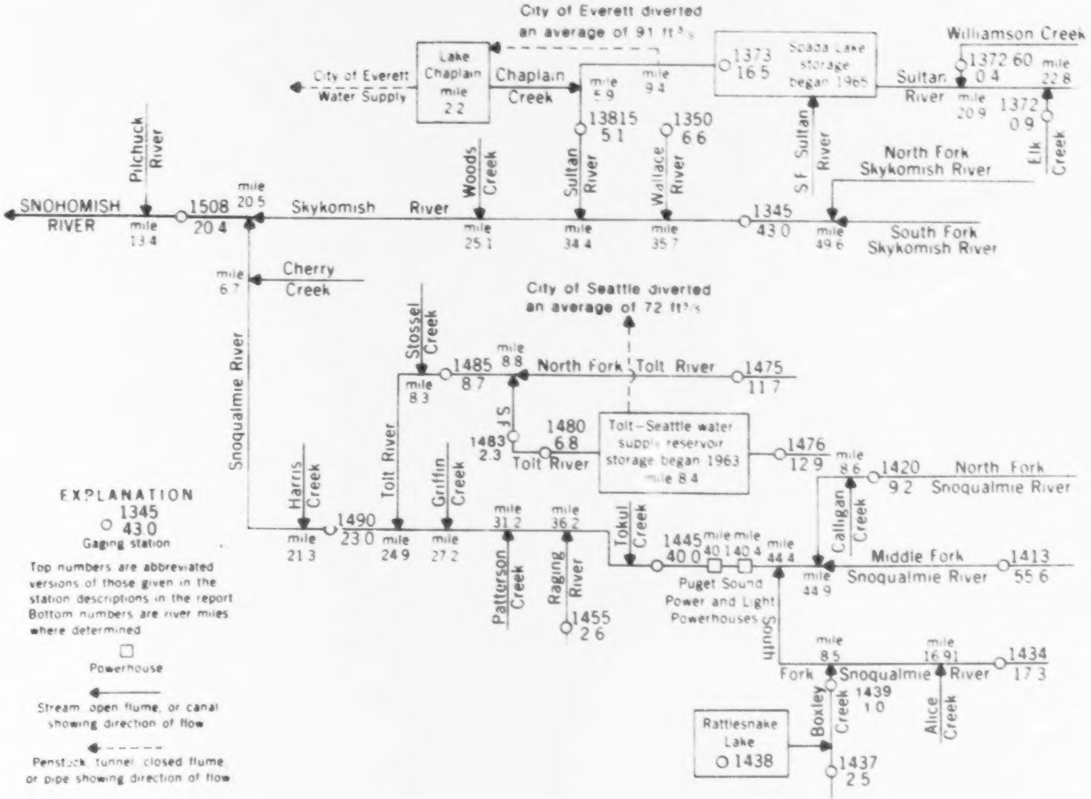
City of Everett diverted
an average of 91 ft³/s
Lake Chaplain mile 2.2
City of Everett Water Supply
Chaplain Creek
Spada Lake storage began 1965
1373 16.5
Williamson Creek
1372.60 0.4
Sultan River
1372 0.9
Elk Creek
13815 5.1
1350 6.6
Pilchuck River
Woods Creek
Sultan River
Wallace River
S.F. Sultan River
North Fork Skykomish River
South Fork Skykomish River
SNOHOMISH RIVER
1508 20.4
Skykomish River
1345 43.0
Cherry Creek
Snoqualmie River
City of Seattle diverted
an average of 72 ft³/s
Stossel Creek
1485 8.7
North Fork Tolt River
1475 11.7
S.F.
1483 2.3
1480 6.8
Tolt River
Tolt–Seattle water supply reservoir storage began 1963 mile 8.4
1476 12.9
1420 9.2
North Fork Snoqualmie River
Harris Creek
Tolt River
Griffin Creek
1490 23.0
Tokul Creek
1445 40.0
Calligan Creek
Middle Fork Snoqualmie River
1413 55.6
Patterson Creek
Raging River
1455 2.6
Puget Sound Power and Light Powerhouses
South Fork Snoqualmie River
1434 17.3
1439 1.0
Boxley Creek
Alice Creek
Rattlesnake Lake
1438
1437 2.5
EXPLANATION
1345 43.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 15.—Gaging stations in Snohomish River basin.

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW¼SW¼ sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi southeast of Gold Bar, 7.3 mi upstream from Wallace River, and at mile 43.0.

DRAINAGE AREA.--535 mi².

PERIOD OF RECORD.--September 1928 to current year. Chemical analyses July 1959 to September 1970, October 1977 to June 1980.

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 209.26 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. No regulation. Several small diversions above station.

AVERAGE DISCHARGE.--55 years, 3,967 ft³/s, 100.65 in/yr, 2,872,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,400 ft³/s Dec. 26, 1980, gage height, 21.38 ft, from rating curve extended above 53,000 ft³/s; minimum, 315 ft³/s Nov. 29, 1952; minimum gage height, 2.73 ft Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 19,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2000	*58,600	*17.70	Jan. 8	0500	37,500	14.64
Jan. 5	1500	25,000	12.35				

Minimum daily discharge, 834 ft³/s Aug 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	914	4270	1880	1290	2140	3050	3590	4350	6850	3480	1940	1520
2	1090	3130	1860	1280	1960	2840	3530	4210	5870	5210	1800	4330
3	1580	2540	33400	1310	1830	2680	3240	4010	5290	5250	1650	2470
4	1300	2850	23300	1820	1710	2600	2860	3850	4660	3910	1560	1820
5	1110	4330	8900	16200	1610	2510	2670	4230	4270	3660	1490	1610
6	1100	5290	5820	10500	1560	2570	2600	4400	3990	3300	1450	1380
7	2560	3970	4290	17000	1540	2890	2650	4440	4850	2840	1380	1280
8	2940	3140	3460	28100	1450	4400	2500	4040	5970	2510	1370	1190
9	2770	2600	2970	12700	1490	8820	2290	3510	5780	2330	1370	1290
10	2560	2260	2610	22900	1510	11200	2180	3100	6470	2180	1440	3480
11	2260	2000	2350	15000	1900	7970	2090	2970	5430	2320	1720	6270
12	1920	1820	2330	9000	2600	5920	1940	3210	4330	5560	1950	3240
13	1650	1690	2710	6720	3720	5030	1830	3480	3720	14100	1540	2400
14	1470	1540	2670	5290	3620	4550	1760	3890	3820	10800	1390	1960
15	1340	1480	2950	4330	3210	4100	1770	3910	5490	9390	1300	1700
16	1310	1700	5430	3700	3370	3580	1950	3380	4460	6450	1210	1530
17	1950	4630	5290	3400	4290	3190	2220	3160	4700	5030	1140	1460
18	1760	5100	4680	3190	5470	2910	2700	3700	5470	4610	1090	1480
19	1510	4040	3990	3100	4370	2670	3530	4040	6470	3830	1060	1520
20	1400	3660	3290	2940	3970	2490	4310	4590	5050	3500	1020	1340
21	1310	2980	2840	2680	3670	2350	4610	6250	3990	3180	984	1220
22	2790	2460	2580	2470	4080	2320	4160	6270	3580	2890	948	1150
23	3240	2100	2320	2740	5950	2490	3890	7500	3690	2780	930	1090
24	2350	1890	2060	2670	7070	2400	4700	8300	3560	2640	914	1040
25	1950	1720	1920	2640	5850	2230	4010	8670	3500	2440	890	1000
26	2670	1620	1860	2750	4700	2100	3400	8220	3500	2630	858	966
27	3160	1580	1690	3560	3970	2100	3050	7900	3530	2300	834	1030
28	3140	1880	1580	3800	3400	2090	3000	9840	3540	2390	858	975
29	3590	2030	1490	3110	---	3300	3190	12500	3480	2130	898	914
30	2840	2030	1430	2680	---	5050	3540	11700	3590	1970	1030	866
31	2510	---	1360	2370	---	4330	---	9020	---	1950	1050	---
TOTAL	64044	82330	145310	201240	92010	116730	89760	172640	138900	127560	39064	53521
MEAN	2066	2744	4687	6492	3286	3765	2992	5569	4630	4115	1260	1784
MAX	3590	5290	33400	28100	7070	11200	4700	12500	6850	14100	1950	6270
MIN	914	1480	1360	1280	1450	2090	1760	2970	3480	1950	834	866
CFSM	3.86	5.13	8.76	12.1	6.14	7.04	5.59	10.4	8.65	7.69	2.36	3.33
IN.	4.45	5.72	10.10	13.99	6.40	8.12	6.24	12.00	9.66	8.87	2.72	3.72
AC-FT	127000	163300	288200	399200	182500	231500	178000	342400	275500	253000	77480	106200

CAL YR 1982 TOTAL 1565215 MEAN 4288 MAX 33400 MIN 853 CFSM 8.01 IN. 108.83 AC-FT 3105000
WTR YR 1983 TOTAL 1323109 MEAN 3625 MAX 33400 MIN 834 CFSM 6.78 IN. 92.00 AC-FT 2624000

12135000 WALLACE RIVER AT GOLD BAR, WA

LOCATION.--Lat 47°51'51", long 122°40'53", in NE¼NW¼ sec.5, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank at downstream side of highway bridge, 1.0 mi north of Gold Bar, 2.1 mi upstream from Olney Creek, and at mile 6.6.

DRAINAGE AREA.--18.6 mi^2.

PERIOD OF RECORD.--October 1928 to September 1933, July 1946 to November 1976, August 1977 to June 1978, July 1980 to current year (seasonal records only). Monthly discharge only for some periods, published in WSP 1316. Water temperatures July 1955 to September 1972.

REVISED RECORDS.--WSP 1316: 1930(M), 1932-33(M). WSP 1932: Drainage area. WDR WA-74-1: 1971-73(P). WDR WA-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 203.00 ft National Geodetic Vertical Datum of 1929. December 1928 to Sept. 20, 1933, nonrecording gage 0.8 mi downstream at different datum. July 25, 1946, to June 30, 1978, water-stage recorder 0.8 mi downstream at different datum.

REMARKS.--Records good. Flow affected by natural storage in Wallace Lake. No diversions above station.

AVERAGE DISCHARGE.--35 years (water years 1929-33, 1947-76), 165 ft^3/s, 117.93 in/yr, 119,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft^3/s Jan. 5, 1969, gage height, 8.37 ft, site and datum then in use; minimum, 5.8 ft^3/s Aug. 25, 29, 30, 1961.

EXTREMES FOR JUNE TO OCTOBER.--Maximum discharge, 1,840 ft^3/s July 13, gage height, 6.37 ft; minimum, 28 ft^3/s Aug. 27, 28, gage height, 1.59 ft.

REVISIONS.--Revised figures of discharge for the period July to October 1980, superseding those published in the report for 1980 are given herein.

EXTREMES FOR AUGUST TO OCTOBER, 1980.--Maximum discharge, 1,380 ft^3/s Sept. 1, gage height, 5.86 ft; minimum, 21 ft^3/s Aug. 16, 17, gage height, 1.97 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, PERIOD AUGUST 1980 TO OCTOBER 1980
MEAN VALUES

DAY	AUG	SEP	OCT
1	29	398	156
2	31	456	99
3	40	185	78
4	33	123	69
5	30	95	61
6	29	80	55
7	28	123	51
8	26	90	48
9	25	72	45
10	24	63	41
11	23	57	39
12	23	54	55
13	23	55	84
14	23	53	50
15	23	47	43
16	23	43	39
17	151	40	37
18	249	38	35
19	83	253	34
20	57	310	44
21	48	144	61
22	42	95	51
23	38	81	41
24	36	69	37
25	34	60	75
26	32	53	65
27	132	49	48
28	164	47	43
29	81	47	38
30	63	379	37
31	59	---	37
TOTAL	1702	3659	1696
MEAN	54.9	122	54.7
MAX	249	456	156
MIN	23	38	34
CFSM	2.89	6.42	2.88
IN.	3.33	7.16	3.32
AC-FT	3380	7260	3360

12135000 WALLACE RIVER AT GOLD BAR, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, PERIOD JUNE 1983 TO OCTOBER 1983
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	97	131	58	156	35
2	101	227	55	507	34
3	118	174	51	173	42
4	86	112	48	133	180
5	73	94	45	112	71
6	69	81	43	90	55
7	81	73	41	85	49
8	90	66	39	79	45
9	78	64	38	113	41
10	270	58	37	285	39
11	131	73	77	180	37
12	109	559	81	110	35
13	86	1010	54	90	34
14	86	449	46	78	33
15	216	352	42	70	32
16	129	218	39	66	31
17	137	188	37	69	49
18	220	180	36	78	49
19	527	137	35	70	39
20	265	124	34	57	68
21	176	110	32	51	55
22	144	93	31	47	247
23	156	84	31	44	144
24	151	77	30	42	81
25	140	72	30	39	66
26	116	86	29	40	56
27	98	86	28	66	53
28	86	101	28	44	49
29	82	77	35	40	45
30	137	68	46	37	79
31	---	62	37	---	232
TOTAL	4255	5286	1293	3051	2105
MEAN	142	171	41.7	102	67.9
MAX	527	1010	81	507	247
MIN	69	58	28	37	31
CFSM	7.47	9.00	2.19	5.37	3.57
IN.	8.33	10.35	2.53	5.97	4.12
AC-FT	8440	10480	2560	6050	4180

12137200 ELK CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°58'14", long 121°33'12", in NW¼SW¼ sec.29, T.29 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on left bank 250 ft downstream from Boulder Creek, about 0.9 mi above mouth, and 14.2 mi northeast of Sultan.

DRAINAGE AREA.--11.4 mi².

PERIOD OF RECORD.--November 1976 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,600 ft, from topographic map.

REMARKS.--Records good [illegible] those above 1,000 ft³/s, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--6 years (water years 1978-83), 119 ft³/s, 141.76 in/yr, 86,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,080 ft³/s Dec. 26, 1980, gage height, 9.49 ft; minimum, 7.9 ft³/s Oct. 12, 13, 14, 1979, Aug. 27-29, 1981; minimum gage height, 0.97 ft on all or part of each day Aug. 18-23, 1977, Oct. 12-14, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,320 ft³/s Dec. 3, gage height, 7.60 ft; minimum, 19 ft³/s Aug. 27, gage height, 1.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	194	77	36	48	77	109	131	125	118	52	159
2	69	93	75	37	43	79	104	112	124	191	45	285
3	68	65	1530	38	39	76	85	103	121	170	37	99
4	36	142	401	23	36	71	75	99	98	109	32	81
5	29	243	154	1000	34	65	73	114	85	97	31	73
6	74	170	108	326	34	79	76	141	89	81	30	52
7	220	112	84	858	33	125	76	141	121	65	29	47
8	124	84	74	804	31	310	63	113	142	54	28	45
9	104	65	64	251	34	674	54	96	108	47	27	55
10	83	54	56	983	38	421	50	82	270	46	28	121
11	58	46	53	361	90	207	47	90	137	77	33	171
12	43	41	84	174	221	144	44	107	103	571	66	86
13	37	37	86	142	214	130	43	111	90	928	37	62
14	32	34	79	108	134	117	46	117	113	339	32	49
15	29	33	105	89	120	102	51	113	160	296	29	42
16	45	51	324	78	156	84	64	85	104	185	27	40
17	75	326	173	98	274	74	77	83	131	160	25	42
18	54	166	117	102	245	64	99	144	157	140	28	51
19	42	124	97	99	130	56	125	128	349	125	24	44
20	37	90	79	87	127	53	135	148	173	110	23	34
21	56	66	70	71	105	49	138	160	120	100	27	33
22	181	53	64	59	205	56	105	160	111	87	22	31
23	99	45	56	78	377	77	112	188	123	78	21	29
24	70	39	52	91	267	62	151	198	116	72	21	28
25	51	36	47	94	165	52	99	195	111	65	23	27
26	159	37	47	120	127	50	89	171	108	62	20	32
27	156	54	42	168	100	57	77	179	98	62	20	34
28	176	153	41	116	84	62	83	263	90	58	21	26
29	130	127	39	82	---	179	94	296	85	60	26	26
30	84	100	38	66	---	212	109	198	128	54	35	25
31	57	---	37	55	---	147	---	144	---	56	29	---
TOTAL	2541	2890	4355	6764	3531	4010	2555	4409	[illegible]	4684	857	2031
MEAN	82.0	96.3	140	218	126	129	85.2	142	129	151	27.6	67.7
MAX	220	326	1530	1000	377	674	153	296	349	928	52	285
MIN	22	33	37	36	31	49	43	82	85	46	20	25
CFSM	7.19	8.45	12.3	19.1	11.1	11.3	7.47	12.5	11.3	13.3	2.42	5.94
IN.	8.29	9.43	14.21	22.07	11.52	13.09	8.34	14.39	12.61	15.32	2.80	6.63
AC-FT	5040	5730	8640	13420	7000	7950	5070	8750	[illegible]	9290	1700	4030

CAL YR 1982 TOTAL 52149 MEAN 143 MAX 1800 MIN 15 CFSM 12.5 IN. 170.17 AC-FT 103400
WTR YR 1983 TOTAL 42609 MEAN 117 MAX 1530 MIN 20 CFSM 10.2 IN. 139.04 AC-FT 84510

SNOHOMISH RIVER BASIN

[illegible] WILLIAMSON CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°54'09", long 121°36'00", in NW1/4 sec.24, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank 0.4 mi upstream from mouth, and 15.0 mi northeast of Sultan.

DRAINAGE AREA.--15.6 mi².

PERIOD OF RECORD.--November 1976 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft, from topographic map.

REMARKS.--Records fair except those above 1,000 ft³/s, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--6 years (water years 1978-83), 174 ft³/s, 151.47 in/yr, 126,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,580 ft³/s Dec. 3, 1982, gage height, 8.40 ft; maximum gage height, 9.07 ft Dec. 26, 1980; minimum, 12 ft³/s Jan. 17, 18, 1979, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,580 ft³/s Dec. 3, gage height, 8.40 ft; minimum, 17 ft³/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	129	154	57	37	99	134	91	139	149	91	47
2	108	173	154	66	64	85	127	87	122	265	79	265
3	75	123	4040	112	57	79	101	87	117	279	71	225
4	43	259	1110	359	49	68	81	81	99	162	62	157
5	33	576	436	2150	45	61	75	91	87	141	59	124
6	73	462	279	955	42	75	73	116	77	199	56	99
7	457	301	202	2160	43	117	69	157	87	95	[illegible]	85
8	236	208	159	2090	40	293	57	119	109	93	54	77
9	190	144	131	728	59	707	51	124	108	93	[illegible]	64
10	144	108	110	2120	81	501	49	104	293	91	54	239
11	110	81	95	867	173	286	52	95	214	172	95	541
12	81	64	165	387	268	193	48	95	157	547	95	226
13	59	49	176	296	310	149	45	95	117	1600	66	152
14	49	42	152	205	208	136	43	104	110	955	57	119
15	42	40	205	159	181	127	56	119	179	665	51	94
16	71	146	561	136	249	95	64	93	144	399	45	67
17	136	660	381	165	411	75	71	85	153	321	39	74
18	91	336	291	152	193	62	89	117	252	286	36	67
19	64	297	249	152	223	52	99	110	675	217	32	71
20	51	208	197	144	217	43	104	117	307	193	31	56
21	54	141	170	111	165	39	112	141	199	165	27	49
22	205	101	162	99	262	40	95	144	157	144	26	42
23	122	73	134	168	419	37	83	165	157	134	24	36
24	95	57	115	152	387	42	112	179	124	117	22	32
25	71	46	108	136	298	33	91	181	134	110	21	29
26	279	45	99	173	205	31	83	170	124	104	20	33
27	303	93	87	206	157	32	75	162	112	104	17	31
28	336	351	77	170	119	31	73	187	104	134	19	27
29	242	245	69	129	---	200	75	232	101	99	25	22
30	162	190	64	108	---	235	83	226	152	89	33	20
31	212	---	61	89	---	202	---	176	---	91	29	---
TOTAL	4236	5949	10358	14997	5152	4288	2382	4090	4941	8433	1440	3274
MEAN	137	198	334	484	184	138	79.4	132	165	272	46.5	109
MAX	457	660	4040	2160	419	707	134	232	675	1600	95	541
MIN	22	40	61	57	40	31	45	81	77	81	17	20
CFSM	8.78	12.7	21.4	31.0	11.8	8.85	5.09	8.46	10.6	17.4	2.98	6.99
IN.	10.10	14.19	24.70	35.75	12.29	10.21	5.68	9.75	11.78	20.11	3.43	7.81
AC-FT	8400	11800	20550	29740	10220	8510	4720	8110	9800	16730	2860	6490

CAL YR 1982 TOTAL 72114 MEAN 198 MAX 4040 MIN 21 CFSM 12.7 IN. 171.95 AC-FT 143000
WTR YR 1983 TOTAL 69574 MEAN 191 MAX 4040 MIN 17 CFSM 12.2 IN. 165.82 AC-FT 138000

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12137800 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, Snoqualmie National Forest, on right bank at Culmback Dam on Sultan River, 1.7 mi downstream from South Fork, 7.8 mi north of Startup, and at mile 16.5.

DRAINAGE AREA.--68.3 mi².

PERIOD OF RECORD.--April 1965 to current year.

REVISED RECORDS.--WDR WA-79-1: 1975-76(M).

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earthfill dam completed to elevation 1,408 ft in 1965; storage began Apr. 5, 1965. Capacity, 34,500 acre-ft between elevations 1,250 ft and 1,360 ft, crest of spillway. No dead storage. Figures given herein represent total contents. Spada Lake is used to regulate the flow of the Sultan River to supplement city of Everett water supply. Midnight elevations for last day of each month are interpolated by using the change between the observed 0900 hours daily elevation on the last day of the month and the first day of the next month.

COOPERATION.--Elevations furnished by city of Everett.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 42,720 acre-ft Jan. 8, 1983, elevation, 1,369.8 ft; minimum observed since reservoir was first filled, 4,250 acre-ft Sept. 30, 1967, elevation, 1,301.28 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 42,720 acre-ft Jan. 8, elevation, 1,369.8 ft; minimum observed, 8,940 acre-ft Sept. 30, elevation, 1,316.1 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,317.0	9,300	--
Oct. 31	1,328.2	14,300	+5,000
Nov. 30	1,330.6	15,500	+1,200
Dec. 31	1,328.7	14,550	-950
CAL YEAR 1982	--	--	-19,390
Jan. 31	1,349.1	26,500	+11,950
Feb. 28	1,365.0	38,500	+12,000
Mar. 31	1,362.5	36,500	-2,000
Apr. 30	1,326.4	13,400	-23,100
May 31	1,323.8	12,100	-1,300
June 30	1,323.6	12,000	-100
July 31	1,320.4	10,660	-1,340
Aug. 31	1,317.2	9,380	-1,280
Sept. 30	1,315.8	8,820	-560
WTR YR 1983	--	--	-480

12138150 SULTAN RIVER BELOW CHAPLAIN CREEK, NEAR SULTAN, WA

LOCATION.--Lat 47°54'52", long 121°48'36", in NE¼SW¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank 0.8 mi downstream from Chaplain Creek, 3.5 mi north of Sultan, and at mile 5.1.

DRAINAGE AREA.--92.6 mi².

PERIOD OF RECORD.--November 1974 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 320 ft, from topographic map.

REMARKS.--Records good. City of Everett diverted about 91 ft³/s daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake (sta 12137300) since Apr. 5, 1965.

AVERAGE DISCHARGE.--8 years, 757 ft³/s, 548,400 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s Dec. 2, 1975, gage height, 13.19 ft, from rating curve extended above 8,000 ft³/s; minimum, 35 ft³/s Aug. 23, 1983, gage height, 2.36 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,300 ft³/s Jan. 8, gage height, 10.28 ft; minimum, 35 ft³/s Aug. 23, gage height, 2.36 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	284	776	350	1170	665	803	1160	1130	416	152	279
2	190	253	749	360	597	743	810	866	783	579	156	1270
3	183	237	1710	411	360	873	810	567	515	672	139	1550
4	186	350	2010	567	316	615	783	476	504	659	83	1130
5	194	302	1770	1230	297	350	756	370	390	646	55	704
6	194	454	1730	717	307	375	550	487	316	880	53	492
7	302	427	1660	1530	390	385	390	622	312	922	51	241
8	284	544	1630	8250	360	938	454	908	302	515	48	198
9	288	763	1590	2710	385	2670	422	1130	266	302	45	186
10	380	1060	1560	6120	390	2610	340	859	665	229	48	257
11	448	1430	1530	3650	360	1700	385	432	1170	221	61	790
12	422	1360	1560	1970	375	1110	375	385	609	983	76	1160
13	401	1300	1770	1770	465	873	365	406	476	2260	101	1130
14	470	852	1650	1670	422	756	345	515	454	1840	95	790
15	470	345	1650	1650	355	710	336	622	567	1710	98	438
16	205	422	1670	1620	365	544	326	691	603	1660	103	422
17	345	1220	1650	1610	390	416	321	678	622	1680	101	375
18	355	1690	1700	1210	390	401	640	697	803	1680	95	350
19	401	1650	1570	866	355	370	1230	678	1760	1610	69	284
20	422	1590	1170	634	487	345	1370	678	1620	1570	69	176
21	504	1070	763	365	653	824	1020	579	1490	1540	65	183
22	573	555	628	355	803	1500	859	461	1390	1510	51	159
23	628	504	465	459	1660	1090	1340	461	976	1480	42	275
24	628	459	406	416	1880	443	1340	803	646	1440	42	249
25	603	390	401	396	1390	360	1300	1130	634	1370	42	233
26	717	345	416	396	1010	312	1280	999	622	1260	51	166
27	710	331	396	1010	776	288	1260	640	591	887	59	136
28	831	470	385	1710	710	297	1230	470	509	550	61	139
29	749	717	370	1660	---	345	1210	470	360	390	101	136
30	340	730	365	1620	---	538	1180	481	396	221	123	142
31	241	---	360	1560	---	866	---	803	---	166	76	---
TOTAL	12820	22104	36060	48842	17418	24312	23830	20564	21481	31848	2414	14056
MEAN	414	737	1163	1576	622	784	794	663	716	1027	77.9	469
MAX	831	1690	2010	8250	1880	2670	1370	1160	1760	2260	156	1550
MIN	156	237	360	350	297	288	321	370	266	166	42	136
AC-FT	25430	43840	71530	96880	34550	48220	47270	40790	42610	63170	4790	27880

CAL YR 1982 TOTAL 323989 MEAN 888 MAX 11400 MIN 6[illegible] AC-FT 642600
WTR YR 1983 TOTAL 275749 MEAN 755 MAX 8250 MIN 42 AC-FT 546900

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW¼SE¼ sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi downstream from Granite Creek, 6.4 mi east of North Bend, and at mile 55.6.

DRAINAGE AREA.--154 mi².

PERIOD OF RECORD.--February 1961 to current year. Water temperatures June 1979 to September 1980.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 780 ft (238 m), from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--22 years, 1,263 ft^3/s, 111.37 in/yr, 915,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft^3/s Dec. 2, 1977, gage height, 14.93 ft; minimum, 111 ft^3/s Oct. 13, 14, 1979, gage height, 1.00 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 16.7 ft from floodmarks, discharge, 44,000 ft^3/s by slope-area measurement at site 6 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	1915	*18,500	*11.91	Jan. 8	0315	16,000	11.12
Jan. 5	1300	13,300	10.23				

Minimum discharge, 258 ft^3/s Aug. 27, gage height, 1.57 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	449	1770	735	375	584	830	1180	1150	1510	1050	648	753
2	484	1160	830	369	536	810	1270	1160	1380	1660	588	2600
3	675	910	12500	408	496	770	1120	1210	1310	1470	524	1160
4	548	1140	6820	1200	460	755	955	1110	1120	1130	484	835
5	456	2000	2360	8560	428	725	885	1220	1030	1080	464	700
6	484	2030	1600	4190	417	795	855	1470	978	978	444	568
7	1130	1430	1190	8660	460	910	855	1400	1160	835	420	592
8	1360	1080	984	9940	417	1480	770	1220	1380	730	428	536
9	1490	860	850	5540	417	3770	695	1020	1350	670	436	592
10	1200	755	750	6200	484	3020	652	885	1540	628	460	2460
11	1010	600	660	3650	665	2110	632	815	1590	648	745	3460
12	810	612	775	2170	860	1560	580	860	1260	1470	820	1430
13	680	576	1090	1640	1100	1370	544	945	1020	4860	568	1000
14	588	520	966	1300	1070	1220	520	1040	1000	4300	488	810
15	524	484	1140	1100	940	1110	524	1210	1610	4940	428	690
16	508	648	1910	966	1050	972	584	1020	1250	2420	393	612
17	900	2650	1570	940	1500	855	665	890	1250	1690	363	576
18	760	1920	1380	920	1580	775	860	1190	2080	1400	348	632
19	628	1520	1240	955	1240	705	1090	1170	2520	1180	333	632
20	556	1360	1030	915	1220	652	1240	1300	1970	1180	320	520
21	552	1040	900	790	1080	620	1280	1790	1400	1060	310	452
22	1250	845	815	700	1300	644	1100	1720	1160	935	298	411
23	1200	720	720	800	2020	700	1070	1930	1210	910	298	387
24	830	536	640	780	2210	612	1330	1970	1220	870	292	366
25	675	584	596	765	1660	568	1060	2020	1100	800	292	349
26	910	548	580	835	1280	572	915	1890	1090	835	270	339
27	950	552	512	1160	1090	584	815	1780	1090	735	262	408
28	1020	845	476	1060	925	596	800	2590	1060	800	282	357
29	1560	860	436	840	---	1810	855	2950	996	710	295	322
30	1060	780	411	725	---	2300	950	2530	1010	636	476	302
31	[illegible]	---	393	640	---	1430	---	1900	---	660	387	---
TOTAL	26516	31515	46859	67081	27489	35390	26651	45155	39694	43270	13114	24850
MEAN	855	1051	1512	2164	982	1142	888	1457	1323	1396	423	828
MAX	1560	2650	12500	9940	2210	3770	1330	2950	2520	4940	820	3460
MIN	449	484	393	369	417	572	520	815	978	628	262	302
CFSM	5.55	6.82	9.82	14.1	6.38	7.42	5.77	9.46	8.59	9.06	2.75	5.38
IN.	6.41	7.61	11.32	16.20	6.64	8.55	6.44	10.91	9.59	10.45	3.17	6.00
AC-FT	52590	62510	92940	133100	54520	70200	52860	89560	78730	85830	26010	49290

CAL YR 1982 TOTAL 489007 MEAN 1340 MAX 14600 MIN 263 CFSM 8.70 IN. 118.12 AC-FT 969900
WTR YR 1983 TOTAL 427586 MEAN 1171 MAX 12500 MIN 262 CFSM 7.60 IN. 103.29 AC-FT 848100

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'54", long 121°42'44", in NW¼NW¼ sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Calligan Creek, 7.0 mi northeast of town of Snoqualmie Falls, and at mile 9.2.

DRAINAGE AREA.--64.0 mi².

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year. Daily water temperatures June 1979 to August 1980.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M). WSP 1736: 1932-34(M), 1935, 1938(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,130 ft, from topographic map. Prior to Oct. 19, 1949, water-stage recorder, and October 1949 to February 1961, crest-stage gage, at site 1,500 ft downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--42 years (water years 1930-49, 1962-83), 502 ft³/s, 106.52 in/yr, 363,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s on basis of slope-area measurement at gage height 16.47 ft; minimum observed, 30 ft³/s Sept. 17-19, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1315	*7,760	*10.08	Jan. 8	0345	6,630	9.46
Jan. 5	1330	6,210	9.23	July 13	1300	4,940	8.46

Minimum discharge, 102 ft³/s Aug. 27, 28, gage height, 2.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	622	330	195	288	354	440	389	448	448	205	379
2	192	390	330	205	270	354	492	386	428	820	193	1330
3	432	295	5030	252	250	340	432	404	440	690	180	484
4	260	420	2300	607	235	330	375	368	365	460	170	372
5	205	695	856	4130	220	318	361	386	327	408	163	337
6	215	630	596	1780	218	358	351	484	315	351	155	276
7	519	440	460	3640	230	420	361	524	368	309	148	273
8	639	344	389	3840	214	690	337	472	436	282	145	245
9	663	285	347	1350	230	1780	306	408	404	273	140	318
10	435	250	312	3000	255	1340	291	361	635	252	138	1020
11	327	222	291	1420	309	916	288	321	504	250	247	1090
12	258	207	340	838	448	610	270	344	428	766	303	492
13	219	197	542	630	569	551	265	372	365	2770	214	365
14	193	182	456	512	508	508	255	393	368	1390	180	306
15	173	172	592	444	432	472	260	456	529	1550	161	267
16	173	235	1210	408	508	408	282	379	393	832	148	242
17	361	1480	735	432	605	351	300	330	456	587	142	232
18	273	874	578	452	635	318	354	556	760	516	135	257
19	219	635	542	484	512	291	424	484	838	424	130	270
20	191	516	444	452	533	273	464	480	615	416	125	222
21	184	400	404	372	488	262	484	569	464	365	120	201
22	524	324	372	330	620	265	396	508	400	324	117	186
23	411	273	333	382	1000	303	365	601	448	297	115	172
24	260	245	303	393	975	279	468	601	452	273	113	161
25	216	222	288	393	690	255	375	615	416	260	110	154
26	384	216	279	468	538	252	337	574	400	267	108	154
27	343	235	252	660	460	260	315	547	372	255	103	195
28	374	440	235	547	389	270	306	690	347	321	103	163
29	597	440	220	412	---	720	327	796	321	267	112	152
30	349	382	207	358	---	772	344	690	386	235	154	143
31	307	---	201	318	---	538	---	508	---	218	135	---
TOTAL	10059	12268	19774	29704	12629	15158	10625	14996	13428	16876	4712	10458
MEAN	324	409	638	958	451	489	354	484	448	544	152	349
MAX	663	1480	5030	4130	1000	1780	492	796	838	2770	303	1330
MIN	163	172	201	195	214	252	255	321	315	218	103	143
CFSM	5.06	6.39	9.97	15.0	7.05	7.64	5.53	7.56	7.00	8.50	2.38	5.45
IN.	5.85	7.13	11.49	17.27	7.34	8.81	6.18	8.72	7.81	9.81	2.74	6.08
AC-FT	19950	24330	39220	58920	25050	30070	21070	29740	26630	33470	9350	20740

CAL YR 1982 TOTAL 201959 MEAN 553 MAX 7280 MIN 89 CFSM 8.64 IN. 117.39 AC-FT 400600
WTR YR 1983 TOTAL 170687 MEAN 468 MAX 5030 MIN 103 CFSM 7.31 IN. 99.21 AC-FT 338600

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA

LOCATION.--Lat 47°24'55", long 121°35'10", in SW¼SW¼ sec.6, T.22 N., R.10 E., King County, Hydrologic Unit 17110010, Snoqualmie National Forest, on left bank 0.4 mi upstream from Alice Creek, 1.5 mi southeast of Garcia, 11 mi southeast of North Bend, and at mile 17.3.

DRAINAGE AREA.--41.6 mi².

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October to November 1971. Water temperatures May 1979 to September 1980.

REVISED RECORDS.--WDR WA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,447.67 ft Washington Highway Department datum.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--23 years, 304 ft³/s, 99.24 in/yr, 220,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,090 ft³/s Nov. 19, 1962, gage height, 11.96 ft; minimum, 25 ft³/s Oct. 25, 26, 27, 1974, gage height, 0.99 ft; minimum gage height, 0.06 ft all or part of each day Oct. 10-14, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in November and December 1959 reached stages of 14.7 ft and 13.4 ft respectively, from flood marks, discharges not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1930	*5,300	*6.36	Sept. 10	2230	1,580	3.14
Jan. 8	0345	4,390	5.70				

Minimum discharge, 50 ft³/s Aug. 26, 27, gage height, 0.51 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	343	137	89	152	231	306	406	368	200	113	127
2	112	252	151	89	144	224	306	401	349	274	106	298
3	148	210	3090	91	132	217	267	397	315	238	101	155
4	120	275	1760	196	127	217	245	366	282	200	96	116
5	135	462	677	1730	119	214	227	411	267	193	91	99
6	142	477	447	1160	116	234	224	469	267	173	69	89
7	276	346	340	2480	116	290	274	447	315	155	87	91
8	248	276	274	2730	108	475	210	366	336	141	83	85
9	296	232	238	1180	106	1020	196	306	294	138	80	119
10	232	205	210	1940	113	885	183	270	370	130	63	568
11	197	179	183	1150	135	627	170	259	327	130	108	654
12	154	155	173	717	155	461	155	278	267	234	103	290
13	135	148	180	525	186	406	150	319	227	276	85	207
14	121	122	177	406	196	357	147	340	238	729	78	167
15	111	108	207	340	186	315	152	361	331	1080	74	144
16	118	260	331	290	220	278	177	298	249	636	72	112
17	169	620	290	263	344	256	214	278	263	366	67	119
18	143	360	270	234	361	238	286	331	401	294	65	147
19	127	340	245	234	290	220	361	353	392	256	63	138
20	117	308	214	220	286	207	424	456	357	242	61	116
21	117	252	186	196	256	200	433	583	278	214	59	103
22	249	211	167	183	302	210	366	546	249	190	59	96
23	251	183	152	196	415	227	366	610	239	177	56	91
24	176	166	138	190	551	207	433	605	235	164	56	87
25	189	151	130	193	428	193	331	610	217	164	54	83
26	211	140	124	220	344	183	286	540	224	164	52	80
27	218	134	113	270	290	186	259	525	214	150	52	87
28	253	134	103	245	252	193	267	723	203	152	58	78
29	344	137	99	203	---	461	302	801	193	138	56	76
30	258	130	97	183	---	509	344	643	186	127	61	72
31	255	---	85	164	---	361	---	456	---	121	63	---
TOTAL	5647	7315	10978	18307	6430	10292	8021	13796	8476	8245	2354	4734
MEAN	182	244	354	591	230	332	267	445	283	266	75.9	158
MAX	344	620	3090	2730	551	1020	433	801	401	1080	113	654
MIN	105	108	85	89	106	183	147	259	186	121	52	72
CFSM	4.38	5.87	8.51	14.2	5.53	7.98	6.42	10.7	6.80	6.39	1.82	3.80
IN.	5.05	6.54	9.81	16.37	5.75	9.20	7.17	12.34	7.58	7.37	2.11	4.23
AC-FT	11200	14510	21770	36310	12750	20410	15910	27360	16810	16350	4670	9390

CAL YR 1982 TOTAL 123489 MEAN 338 MAX 4050 MIN 46 CFSM 8.13 IN. 110.43 AC-FT 244900
WTR YR 1983 TOTAL 104595 MEAN 287 MAX 3090 MIN 52 CFSM 6.90 IN. 93.53 AC-FT 207500

12143700 BOXLEY CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'58", long 121°45'04", in NE¼SW¼ sec.35, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on left bank 1.7 mi northeast of town of Cedar Falls, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--1.57 mi².

PERIOD OF RECORD.--August 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft, from topographic map.

REMARKS.--Records poor. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--38 years, 24.4 ft³/s, 17,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189 ft³/s Dec. 19, 1977, gage height, 2.88 ft, maximum gage height, 3.13 ft Feb. 28, 1982; no flow part or all of each day Oct. 28 to Nov. 9, 1966, Nov. 5-8, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 48 ft³/s Jan. 24-27, gage height, 2.87 ft; minimum daily, 1.5 ft³/s on many days in November.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	1.9	1.6	12	39	11	13	15	20	20	31	24
2	3.1	1.8	1.6	12	37	11	13	15	20	20	33	24
3	3.1	1.8	2.1	13	36	11	12	15	20	19	34	24
4	3.0	1.8	2.1	13	34	11	12	15	20	19	34	23
5	3.0	1.8	2.1	15	32	11	12	15	20	19	35	23
6	3.1	1.7	2.2	14	30	11	12	15	20	19	35	22
7	3.1	1.6	2.2	14	28	11	12	15	21	19	36	21
8	3.1	1.6	2.2	14	27	11	12	15	21	18	36	21
9	3.0	1.6	2.3	14	26	12	13	15	21	18	36	20
10	3.0	1.6	2.4	13	24	11	13	15	22	18	35	21
11	2.9	1.6	2.4	13	22	11	13	15	22	18	36	20
12	2.9	1.6	2.6	13	21	11	13	15	22	19	35	20
13	2.8	1.5	2.7	13	20	11	13	15	22	20	35	19
14	2.8	1.5	2.8	13	18	11	13	15	22	20	35	18
15	2.8	1.5	2.8	15	18	11	13	16	21	20	34	18
16	2.8	1.6	3.7	18	17	11	13	16	22	20	34	18
17	2.8	1.7	3.8	22	16	11	13	16	22	20	33	18
18	2.7	1.5	4.4	27	15	12	13	16	22	20	33	18
19	2.6	1.7	5.2	31	15	12	13	16	21	20	32	17
20	2.6	1.7	5.9	37	14	12	13	16	21	20	32	17
21	2.5	1.6	6.9	41	14	12	14	16	21	21	31	17
22	2.5	1.6	7.4	44	13	12	14	17	21	21	30	16
23	2.4	1.5	8.6	46	13	12	14	17	21	22	30	16
24	2.2	1.5	9.2	47	13	12	14	17	21	24	29	16
25	2.2	1.5	9.9	48	12	12	14	17	20	25	28	16
26	2.2	1.5	9.6	48	12	12	14	17	20	27	28	15
27	2.0	1.5	11	48	11	12	14	17	20	28	28	15
28	2.1	1.5	11	46	11	13	14	18	20	28	27	15
29	2.0	1.5	11	45	---	13	14	18	20	29	27	15
30	1.9	1.5	12	42	---	13	14	18	20	30	26	14
31	1.9	---	12	40	---	13	---	19	---	31	24	---
TOTAL	82.2	48.3	165.2	831	588	360	394	497	626	672	992	561
MEAN	2.65	1.61	5.33	26.8	21.0	11.6	13.1	16.0	20.9	21.7	32.0	18.7
MAX	3.1	1.9	12	48	39	13	14	19	22	31	36	24
MIN	1.9	1.5	1.6	12	11	11	12	15	20	18	24	14
AC-FT	163	96	328	1650	1170	714	781	986	1240	1330	1970	1110

CAL YR 1982 TOTAL 6132.6 MEAN 16.8 MAX 89 MIN 1.5 AC-FT 12160
WTR YR 1983 TOTAL 5816.7 MEAN 15.9 MAX 48 MIN 1.5 AC-FT 11540

12143800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW¼SW¼ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore, and 0.6 mi northeast of town of Cedar Falls.

DRAINAGE AREA.--1.86 mi².

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in files of the Geological Survey.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--No diversions. Inflow is mostly seepage from Chester Morse Lake. Most outflow from lake is seepage; however, when the lake is at a gage height above 906 ft, surface-water discharge flows through Rattlesnake Ditch toward Boxley Creek.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft Nov. 25, 26, 1959; minimum observed, 852.80 ft Jan. 9, 1953, but may have been less during Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 905.60 ft Feb. 8; minimum observed, 882.68 ft Dec. 2.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0730

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	893.76	887.94	882.74	891.30	905.02	904.00	901.84	900.16	899.70	900.20	901.84	903.58
2	893.56	887.90	882.68	891.60	905.18	903.92	901.84	900.10	899.71	900.26	901.88	903.67
3	893.38	887.54	882.70	891.96	905.20	903.82	901.82	900.08	899.72	900.24	901.98	903.64
4	893.14	887.32	882.90	892.17	905.38	903.72	901.82	900.06	899.74	900.22	902.06	903.64
5	892.90	887.10	883.04	892.80	905.40	903.60	901.78	900.04	899.75	900.18	902.16	903.66
6	892.70	887.06	883.10	893.20	905.44	903.48	901.75	900.04	899.78	900.14	902.23	903.66
7	892.52	886.76	883.90	895.18	905.52	903.34	901.72	900.01	899.78	900.10	902.32	903.66
8	892.28	887.16	883.60	896.00	905.60	903.20	901.62	900.00	899.81	900.10	902.40	903.64
9	892.10	886.26	884.54	897.78	905.48	903.20	901.54	899.98	899.80	900.06	902.52	903.60
10	891.90	886.04	884.70	898.78	905.44	903.18	901.48	899.96	899.86	900.02	902.60	903.58
11	891.68	885.82	884.80	899.58	905.38	903.22	901.42	899.94	899.94	899.98	902.70	903.00
12	891.50	885.56	885.20	900.26	905.34	903.26	901.33	899.92	900.00	900.04	902.86	903.58
13	891.30	885.32	885.46	900.74	905.30	903.31	901.26	899.92	900.00	900.10	902.92	903.50
14	891.12	885.10	885.66	901.08	905.18	903.26	901.16	899.90	900.02	900.12	903.04	903.48
15	890.94	884.94	885.98	901.40	905.10	903.22	901.08	899.94	900.08	900.38	903.12	903.40
16	890.80	884.90	886.22	901.72	905.06	903.18	901.02	899.90	900.10	900.58	---	903.37
17	890.72	884.44	886.58	901.70	904.98	903.14	900.92	899.88	900.14	900.84	---	903.36
18	890.58	884.28	886.90	901.80	904.91	903.10	900.86	899.88	900.20	901.02	903.25	903.28
19	890.48	884.10	887.24	902.02	904.88	903.00	900.78	899.86	900.22	901.10	903.30	903.24
20	890.20	883.90	887.52	902.16	904.76	902.94	900.72	899.85	900.28	901.28	903.34	903.20
21	890.02	883.81	887.88	902.32	904.62	902.82	900.67	899.83	900.28	901.36	903.38	903.10
22	889.96	883.72	888.26	902.46	904.56	902.75	900.58	899.82	900.29	901.40	903.42	903.00
23	889.70	883.69	888.58	902.76	904.48	902.62	900.54	899.80	900.30	901.42	903.44	902.96
24	889.51	883.36	888.88	902.98	904.46	902.48	900.49	899.78	900.32	901.44	903.48	902.86
25	889.29	883.28	889.14	903.24	904.40	902.34	900.44	899.76	900.32	901.46	903.50	902.74
26	889.16	883.20	889.55	903.52	904.32	902.20	900.40	899.74	900.32	901.50	903.50	902.68
27	888.96	883.14	889.80	903.84	904.24	902.09	900.36	899.72	900.30	901.56	903.50	902.64
28	888.74	883.02	890.16	904.12	904.14	901.98	900.28	899.70	900.28	901.62	903.52	902.56
29	888.58	882.94	890.46	904.30	---	901.90	900.26	899.68	900.24	901.66	903.54	902.46
30	888.38	882.88	890.74	904.52	---	901.90	900.22	899.66	900.22	901.72	903.54	902.34
31	888.23	---	891.04	904.82	---	901.88	---	899.66	---	901.76	903.56	---
MEAN	890.91	885.08	886.46	899.75	904.99	902.97	901.07	899.89	900.05	900.77	---	903.24
MAX	893.76	887.94	891.04	904.82	905.60	904.00	901.84	900.16	900.32	901.76	---	903.67
MIN	888.23	882.88	882.68	891.30	904.14	901.88	900.22	899.66	899.70	899.98	---	902.34

12143900 BOXLEY CREEK NEAR EDGEWICK, WA

LOCATION.--Lat 47°26'56", long 121°43'50", in SW¼SE¼NW¼ sec.25, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 4.0 mi southeast of North Bend, and 0.9 mi upstream from mouth.

DRAINAGE AREA.--3.64 mi².

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 650 ft, from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record, Oct. 1-12, Jan. 15 to Feb. 2, July 11-21, Aug. 13 to Sept. 5, 21-30, which are poor. Many small diversions for domestic use above station. No regulation; flow is mostly seepage from Chester Morse Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 173 ft³/s Feb. 24, 1982, gage height, 5.07 ft; minimum daily discharge, 13 ft³/s Nov. 13-15, 1982; minimum observed gage height, 4.20 ft Nov. 14, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 67 ft³/s Jan. 25; minimum daily, 13 ft³/s Nov. 13-15, minimum observed gage height, 4.20 ft Nov. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	15	15	24	54	32	33	30	33	35	41	36
2	17	14	16	24	53	32	33	30	33	35	44	36
3	17	14	27	26	52	32	32	30	33	33	49	36
4	17	15	27	29	46	32	30	30	33	33	52	36
5	17	16	22	30	41	32	30	30	33	33	52	36
6	16	16	21	30	41	30	30	30	35	33	54	36
7	16	15	18	30	38	30	30	30	35	33	56	36
8	16	15	17	30	35	32	30	30	35	33	56	38
9	16	14	17	30	35	33	30	30	35	33	56	38
10	15	14	16	26	32	35	30	30	35	33	56	38
11	15	14	16	25	30	32	30	30	35	33	58	36
12	15	14	17	25	30	32	30	30	35	34	58	38
13	15	13	17	25	30	32	30	30	35	35	58	38
14	15	13	18	25	32	32	30	30	35	35	56	38
15	15	13	19	26	30	29	30	32	35	35	54	38
16	16	15	20	29	30	30	30	30	35	35	52	36
17	16	20	21	32	30	30	30	30	35	35	49	36
18	15	17	21	38	32	30	30	30	35	35	46	36
19	15	20	21	45	33	30	30	30	35	35	43	35
20	15	20	22	52	33	30	30	30	35	35	40	35
21	15	18	22	55	33	30	30	30	35	36	38	34
22	15	17	22	58	33	30	30	30	35	36	37	34
23	15	16	22	62	33	30	30	30	35	36	36	34
24	14	16	22	65	33	30	30	30	35	35	36	34
25	15	15	23	67	32	30	30	30	35	36	36	34
26	16	15	23	66	32	30	30	30	35	35	36	33
27	14	15	23	65	32	30	30	32	33	36	36	33
28	17	15	23	64	32	30	30	32	35	36	36	33
29	16	15	24	62	---	35	30	32	33	40	36	33
30	15	15	24	59	---	35	30	33	33	41	36	33
31	15	---	24	56	---	33	---	33	---	44	36	---
TOTAL	484	464	640	1280	997	970	908	944	1034	1092	1429	1067
MEAN	15.6	15.5	20.6	41.3	35.6	31.3	30.3	30.5	34.5	35.2	46.1	35.6
MAX	18	20	27	67	54	35	33	33	35	44	58	38
MIN	14	13	15	24	30	29	30	30	33	33	36	33
AC-FT	960	920	1270	2540	1980	1920	1800	1870	2050	2170	2830	2120

CAL YR 1982	TOTAL	15013	MEAN	41.1	MAX	167	MIN	13	AC-FT	29780
WTR YR 1983	TOTAL	11309	MEAN	31.0	MAX	67	MIN	13	AC-FT	22430

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'28", in SW¼SW¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank 0.3 mi downstream from Snoqualmie Falls, 0.4 mi upstream from Tokul Creek, 1.5 mi northwest of Snoqualmie, and at mile 40.0.

DRAINAGE AREA.--375 mi^2.

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to Jul, 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAGE.--Water-stage recorder. Altitude of gage is 120 ft, from river-profile map. Prior to Nov. 3, 1902, and Nov. 1 to Dec. 31, 1906, nonrecording gages above and below Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi upstream and 300 ft downstream from South Fork, at different datum.

REMARKS.--Records good. Medium and low flows affected by powerplant 0.1 mi above station.

AVERAGE DISCHARGE.--53 years (water years 1899, 1903-04, 1908-32, 1959-83), 2,599 ft^3/s, 1,883,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft^3/s Nov. 23, 1959, gage height, 19.78 ft; minimum, 9.7 ft^3/s Aug. 14, 27, 1958, gage height, -0.53 ft; minimum daily, 88 ft^3/s Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,000 ft^3/s Dec. 4, gage height, 16.37 ft; minimum, 318 ft^3/s Sept. 30, gage height, 2.75 ft; minimum daily, 664 ft^3/s Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1070	3370	1740	1130	1700	2160	2830	2440	2920	2100	1370	1310
2	1060	2450	184	1160	1600	2080	2970	2470	2710	3220	1270	4760
3	1570	1950	1830	1300	1500	1990	2700	2570	2650	3160	1160	2710
4	1310	2110	19300	2240	1400	1930	2380	2430	2320	2390	1110	1900
5	1100	3470	6070	16100	1330	1870	2200	2550	2110	2200	1070	1690
6	1020	4160	4150	10000	1310	2010	2120	3030	1980	1990	1030	1380
7	2260	2950	3210	15200	1360	2190	2120	3100	2220	1750	1010	1380
8	2850	2330	2650	22400	1280	3210	1990	2820	2560	1580	990	1230
9	2900	1940	2320	8650	1280	7410	1830	2430	2580	1470	990	1380
10	2400	1680	2070	11900	1380	6910	1740	2140	2920	1380	954	3090
11	2020	1500	1850	8500	1660	5070	1690	1940	3120	1360	1400	6850
12	1520	1370	1940	5470	1960	3780	1570	1980	2570	2570	1730	3190
13	1370	1310	2680	4180	2560	3370	1470	2130	2140	7950	1300	2290
14	1230	1190	2490	3460	2610	3000	1420	2320	2010	7350	1100	1840
15	1110	1120	2900	2940	2310	2790	1410	2660	2810	8850	1010	1590
16	1050	1290	4490	2650	2540	2470	1500	2380	2520	5250	948	1400
17	1710	4810	3960	2540	3130	2190	1620	2080	2360	3660	885	1340
18	1600	4500	3510	2490	3670	2020	1930	2530	3640	3130	845	1390
19	1330	3470	3270	2570	2920	1850	2370	2680	4420	2620	820	1530
20	1170	3190	2790	2500	2840	1730	2690	2690	3850	2520	795	1270
21	1120	2520	2510	2210	2730	1650	2830	3510	2870	2320	760	1130
22	2110	2080	2290	2010	2900	1690	2540	3340	2430	2030	736	1050
23	2460	1780	2050	2150	4220	1770	2320	3660	2490	1910	714	984
24	1710	1580	1840	2170	4790	1680	2810	3760	2480	1790	723	936
25	1410	1450	1700	2140	3970	1570	2460	3820	2310	1700	696	895
26	1860	1350	1690	2280	3190	1510	2110	3640	2210	1750	664	860
27	1980	1350	1500	2950	2750	1520	1940	3360	2180	1610	682	1010
28	1920	1900	1400	2900	2400	1580	1850	4030	2080	1770	673	948
29	3250	2040	1310	2360	---	3520	1950	4940	1960	1600	723	855
30	2320	1910	1260	2070	---	4580	2100	4580	2030	1450	870	790
31	1920	---	1170	1910	---	3450	---	3570	---	1410	912	---
TOTAL	53710	68120	110240	152530	67290	84550	63460	91580	77450	85840	29940	52978
MEAN	1733	2271	3556	4920	2403	2727	2115	2954	2582	2769	966	1766
MAX	3250	4810	19300	22400	4790	7410	2970	4940	4420	8850	1730	6850
MIN	1020	1120	1170	1130	1280	1510	1410	1940	1960	1360	664	790
CFSM	4.62	6.06	9.48	13.1	6.41	7.27	5.64	7.88	6.89	7.38	2.58	4.71
IN.	5.33	6.76	10.94	15.13	6.68	8.39	6.30	9.08	7.68	8.52	2.97	5.26
AC-FT	106500	135100	218700	302500	133500	167700	125900	181600	153600	170300	59390	105100

CAL YR 1982 TOTAL 1066535 MEAN 2922 MAX 27800 MIN 559 CFSM 7.79 IN. 105.80 AC-FT 2115000
WTR YR 1983 TOTAL 937688 MEAN 2569 MAX 22400 MIN 664 CFSM 6.85 IN. 93.02 AC-FT 1860000

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi southwest of Fall City, and 2.6 mi upstream from mouth.

DRAINAGE AREA.--30.6 mi².

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum), December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 250 ft, from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Records good except those for period of no gage-height record Aug. 4-29, which are fair. Some small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--22 years (water years 1946-50, 1965-72, 1975-83), 139 ft³/s, 61.69 in/yr, 100,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,880 ft³/s Dec. 15, 1979, gage height, 5.71 ft; maximum gage height, 6.75 ft Feb. 9, 1951; minimum daily discharge, 4.4 ft³/s Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2000	2,170	4.83	Jan. 5	1300	*2,750	*5.17

Minimum discharge, 18 ft³/s Aug. 27, gage height, 0.85 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	151	212	61	101	125	180	31	31	38	36	59
2	34	117	194	76	89	112	215	30	29	53	34	115
3	43	91	1260	142	79	99	180	30	28	43	31	56
4	35	132	1030	780	73	88	147	29	25	35	31	44
5	30	171	431	2000	67	87	123	33	24	32	30	37
6	40	194	297	933	77	109	103	50	22	31	29	33
7	61	160	209	1020	97	111	93	49	22	31	28	36
8	50	123	163	1230	77	225	85	51	21	30	28	31
9	57	99	136	593	96	405	79	56	20	29	27	30
10	46	83	114	836	120	339	77	47	59	26	27	104
11	37	72	98	472	123	246	74	42	46	26	49	156
12	34	66	125	330	114	194	67	40	37	100	60	89
13	30	61	179	231	169	159	62	36	31	305	43	65
14	27	56	182	181	184	133	58	34	27	233	35	55
15	24	53	208	149	158	113	54	100	27	410	31	46
16	37	92	264	127	162	98	51	67	25	221	29	42
17	78	373	290	116	179	86	48	55	30	153	27	39
18	60	317	328	104	166	76	45	50	50	120	26	67
19	47	387	406	114	141	69	43	45	66	94	25	63
20	40	392	312	100	166	63	44	40	74	85	24	47
21	41	243	277	89	142	59	44	38	57	68	23	40
22	93	175	223	83	138	64	41	35	50	59	22	35
23	78	136	172	140	194	59	39	33	57	52	21	32
24	58	113	141	130	229	53	49	30	51	47	21	30
25	52	96	123	123	211	49	43	28	43	58	20	30
26	105	85	125	125	200	47	44	27	41	66	19	30
27	75	83	103	209	167	51	40	26	37	58	19	51
28	113	146	91	194	143	58	37	25	33	61	20	37
29	203	149	81	152	---	245	34	23	32	50	23	33
30	121	182	72	135	---	266	32	22	33	43	28	30
31	104	---	67	115	---	221	---	27	---	38	24	---
TOTAL	1887	4598	7913	11090	3862	4109	2231	1229	1128	2695	890	1562
MEAN	60.9	153	255	358	138	133	74.4	39.6	37.6	86.9	28.7	52.1
MAX	203	392	1260	2000	229	405	215	100	74	410	60	156
MIN	24	53	67	61	67	47	32	22	20	26	19	30
CFSM	1.99	5.00	8.33	11.7	4.51	4.35	2.43	1.29	1.23	2.84	.94	1.70
IN.	2.29	5.59	9.62	13.48	4.69	5.00	2.71	1.49	1.37	3.28	1.08	1.90
AC-FT	3740	9120	15700	22000	7660	8150	4430	2440	2240	5350	1770	3100

CAL YR 1982	TOTAL	51598	MEAN	141	MAX	1780	MIN	12	CFSM	4.61	IN.	62.73	AC-FT	102300
WTR YR 1983	TOTAL	43194	MEAN	118	MAX	2000	MIN	19	CFSM	3.86	IN.	52.51	AC-FT	85680

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW¼NE¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi upstream from confluence with South Fork, 7.4 mi northeast of Carnation, and at mile 11.7.

DRAINAGE AREA.--39.9 mi².

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft, from river-profile map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--26 years (water years 1953-63, 1969-83), 364 ft³/s, 123.89 in/yr, 263,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft³/s Dec. 15, 1959, gage height, 13.15 ft, from rating curve extended above 2,800 ft³/s; minimum, 38 ft³/s Sept. 13, 14, 1958, minimum gage height, 3.36 ft Sept. 25, 26, 27, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1100	*4,830	*10.19	July 13	1100	3,100	8.93
Jan. 8	0200	4,190	9.96				

Minimum discharge, 86 ft³/s Oct. 1, gage height, 3.78 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	611	302	174	263	302	358	215	174	272	164	394
2	124	278	283	192	248	287	376	212	180	434	158	1020
3	154	204	3090	239	233	275	323	227	217	410	150	323
4	117	339	1170	815	218	266	296	207	170	248	142	248
5	101	469	530	2970	210	257	278	212	150	202	137	220
6	120	368	390	1110	210	311	269	305	140	176	131	185
7	234	267	317	2540	220	372	269	314	150	162	128	182
8	231	215	281	2340	200	700	248	287	158	152	125	176
9	212	183	257	998	210	1150	236	275	152	148	121	376
10	159	165	239	1800	230	785	225	242	390	137	120	645
11	131	152	220	954	270	530	236	210	239	135	207	518
12	115	146	330	645	330	410	225	215	210	908	202	293
13	106	139	586	526	420	369	220	220	176	1990	142	227
14	99	132	414	458	370	355	217	222	166	725	128	195
15	95	132	502	440	340	344	220	308	205	635	121	178
16	133	231	1020	405	370	308	227	242	170	426	116	176
17	207	1130	635	375	400	278	236	205	197	320	113	174
18	149	535	510	360	450	257	257	317	334	272	109	207
19	125	441	406	350	370	242	272	269	398	239	106	192
20	113	370	341	340	390	227	287	245	302	225	104	166
21	115	275	327	315	370	217	302	269	217	215	101	158
22	283	229	305	290	440	227	245	239	190	195	100	148
23	220	203	275	325	540	251	225	260	217	180	97	142
24	150	187	254	315	700	220	314	254	215	170	97	137
25	129	175	245	300	500	210	248	251	190	168	95	133
26	304	171	239	340	420	205	225	236	178	323	92	131
27	236	193	215	465	370	210	212	215	164	236	91	152
28	279	384	205	510	330	220	205	248	152	334	92	133
29	328	346	195	370	---	474	210	272	150	225	101	128
30	202	298	187	330	---	538	210	227	269	192	114	123
31	252	---	180	284	---	442	---	187	---	174	103	---
TOTAL	5312	8968	14450	21875	9622	11239	7671	7607	6220	10628	3807	7480
MEAN	171	299	466	706	344	363	256	245	207	343	123	249
MAX	328	1130	3090	2970	700	1150	376	317	398	1990	207	1020
MIN	89	132	180	174	200	205	205	187	140	135	91	123
CFSM	4.29	7.49	11.7	17.7	8.62	9.10	5.42	6.14	5.19	8.60	3.08	6.24
IN.	4.95	8.36	13.47	20.39	8.97	10.48	7.15	7.09	5.80	9.91	3.55	6.97
AC-FT	10540	17790	28660	43390	19090	22290	15220	15090	12340	21080	7550	14840

CAL YR 1982 TOTAL 133737 MEAN 366 MAX 51[illegible]0 MIN 70 CFSM 9.17 IN. 124.69 AC-FT 265300
WTR YR 1983 TOTAL 114879 MEAN 315 MAX 3090 MIN 89 CFSM 7.89 IN. 107.11 AC-FT 227900

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE¼SW¼ sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Phelps Creek, 8.1 mi south of Index, and at mile 12.9.

DRAINAGE AREA.--5.34 mi².

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,850 ft, from topographic map. Prior to Oct. 1, 1961, at datum 0.85 ft higher.

REMARKS.--Records good except those for period of no gage-height record Apr. 25 to June 7, which are fair, and those above 900 ft³/s, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years (water years 1961-63, 1969-83), 55.6 ft³/s, 141.39 in/yr, 40,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,190 ft³/s Jan. 23, 1982; maximum gage height, 7.13 ft, present datum, Dec. 14, 1959; minimum daily discharge, 2.3 ft³/s Aug. 28-30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 550 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	0900	1,160	4.12	July 11	2300	784	3.59
Jan. 5	0945	*1,180	*4.15				

Minimum discharge, 5.6 ft³/s Aug. 27, 28, gage height, 0.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	98	24	12	19	30	46	52	66	62	14	72
2	22	40	31	12	17	29	48	59	61	110	12	180
3	38	26	772	17	15	28	39	71	52	112	12	52
4	18	63	229	118	14	28	33	64	39	52	10	41
5	12	130	78	640	13	26	33	77	34	40	9.5	36
6	16	75	49	223	13	37	33	90	29	30	9.2	26
7	56	41	36	600	13	55	34	80	35	23	9.0	27
8	54	28	29	412	12	157	30	62	46	21	8.8	20
9	48	21	24	142	13	250	26	54	39	19	8.8	35
10	29	16	22	496	17	167	23	46	116	17	9.1	182
11	20	13	20	155	33	96	23	43	61	60	28	108
12	15	12	43	76	52	62	22	45	52	302	26	45
13	12	11	65	55	70	55	21	54	41	316	15	31
14	10	9.7	43	43	56	54	20	68	41	142	12	22
15	8.5	10	51	35	46	45	23	72	57	102	10	18
16	19	36	145	31	63	37	28	64	39	57	9.1	17
17	33	229	84	33	87	31	32	50	53	41	8.5	16
18	20	84	63	34	79	27	43	67	98	32	8.3	27
19	14	55	47	36	55	24	55	62	81	28	7.8	22
20	11	38	34	35	72	22	63	78	62	29	7.3	16
21	13	24	27	28	54	21	65	94	46	23	6.8	14
22	39	17	24	23	96	24	48	90	40	20	6.5	12
23	33	14	21	44	132	31	46	93	45	18	6.3	11
24	20	12	20	37	128	24	67	102	46	16	6.3	11
25	15	11	18	40	74	21	50	110	39	34	6.3	9.7
26	48	10	17	45	54	21	42	100	36	30	5.8	11
27	39	13	15	76	42	24	37	90	32	39	5.6	15
28	55	35	15	52	34	28	35	130	28	33	5.8	11
29	60	35	14	34	---	118	37	165	26	19	7.5	9.4
30	31	28	13	26	---	96	43	145	45	17	12	8.5
31	45	---	13	21	---	57	---	96	---	15	8.5	---
TOTAL	860.5	1234.7	2086	3631	1373	1725	1145	2473	1485	1859	311.8	1100.6
MEAN	27.8	41.2	67.3	117	49.0	55.6	38.2	79.8	49.5	60.0	10.1	36.7
MAX	60	229	772	640	132	250	67	165	116	316	28	182
MIN	7.0	9.7	13	12	12	21	20	43	26	15	5.6	8.5
CFSM	5.21	7.72	12.6	21.9	9.18	10.4	7.15	14.9	9.27	11.2	1.89	6.87
IN.	5.99	8.60	14.53	25.29	9.56	12.02	7.98	17.23	10.34	12.95	2.17	7.67
AC-FT	1710	2450	4140	7200	2720	3420	2270	4910	2950	3690	619	2180

CAL YR 1982 TOTAL 20816.8 MEAN 57.0 MAX 1070 MIN 4.6 CFSM 10.7 IN. 145.02 AC-FT 41290
WTR YR 1983 TOTAL 19284.6 MEAN 52.8 MAX 772 MIN 5.6 CFSM 9.89 IN. 134.34 AC-FT 38250

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'44", in SW¼SW¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi upstream from private road bridge, 1.6 mi downstream from South Fork Tolt Reservoir, 9.8 mi northeast of Carnation, and at mile 6.5.

DRAINAGE AREA.--19.7 mi².

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft, from river-profile map.

REMARKS.--Records good. Regulation by South Fork Tolt Reservoir since September 1963, capacity, 57,830 acre-ft. During the current water year the Seattle Water Department diverted an average daily discharge of about 72 ft³/s above the station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft³/s, 143,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft³/s Dec. 15, 1959, gage height, 7.45 ft, from rating curve extended above 2,700 ft³/s; maximum gage height, 7.62 ft Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft³/s Sept. 12, 1963, minimum gage height, 0.81 ft Aug. 23-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,040 ft³/s Jan. 10, gage height, 4.45 ft; minimum, 36 ft³/s Oct. 1, gage height, 2.12 ft, minimum gage height, 2.05 ft Aug. 25 to Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	55	62	56	66	70	69	56	57	49	48	52
2	38	55	63	57	64	66	70	56	49	50	46	56
3	39	69	100	59	64	66	67	56	42	48	46	44
4	37	59	78	81	63	64	67	56	42	45	45	44
5	39	59	69	108	63	66	67	59	42	45	45	42
6	51	59	268	330	64	67	66	60	42	44	44	42
7	49	57	590	512	64	67	66	60	42	44	44	42
8	49	57	686	776	63	75	66	60	42	44	44	50
9	48	56	680	512	64	78	66	60	42	43	43	66
10	48	56	480	854	63	73	66	60	46	43	42	64
11	48	56	165	716	63	70	67	59	43	43	46	59
12	46	56	171	405	64	69	66	59	43	62	43	56
13	46	55	174	243	67	67	64	59	42	135	42	55
14	46	55	405	159	66	67	64	59	42	360	42	54
15	46	55	680	108	66	67	64	60	42	345	42	72
16	54	59	335	81	66	67	64	59	42	239	42	63
17	50	78	67	360	67	66	64	59	43	147	42	83
18	48	66	66	680	67	66	64	63	45	100	42	83
19	46	62	66	686	67	64	64	60	44	72	42	127
20	46	64	64	674	69	64	64	59	44	54	41	108
21	46	62	64	662	67	64	64	59	43	49	41	106
22	50	60	63	644	67	66	59	59	43	49	41	106
23	48	59	62	650	69	64	54	59	46	49	41	106
24	48	59	60	644	73	64	56	59	44	48	41	106
25	49	57	60	340	69	63	54	57	43	49	40	106
26	55	57	60	67	69	63	54	57	44	49	40	106
27	50	60	59	73	67	64	54	57	43	50	40	106
28	51	63	59	67	67	66	55	57	43	50	41	104
29	54	62	56	67	---	75	56	57	44	48	40	104
30	51	62	56	67	---	73	56	57	45	48	41	80
31	52	---	56	66	---	69	---	57	---	48	40	---
TOTAL	1464	1789	5924	10804	1848	2090	1877	1814	1314	2549	1317	2312
MEAN	47.2	59.6	191	349	66.0	67.4	62.6	58.5	43.8	82.2	42.5	77.1
MAX	55	78	686	854	73	78	70	63	57	360	48	127
MIN	36	55	56	56	63	63	54	56	42	43	40	42
AC-FT	2900	3550	11750	21430	3670	4150	3720	3600	2610	5060	2610	4590

CAL YR 1982 TOTAL 44820 MEAN 123 MAX 1630 MIN 28 AC-FT 88900
WTR YR 1983 TOTAL 35102 MEAN 96.2 MAX 854 MIN 36 AC-FT 69620

12148300 SOUTH FORK TOLT RIVER BELOW REGULATING POND, NEAR CARNATION, WA

LOCATION.--Lat 47°41'49", long 121°47'10", in SW¼NE¼ sec.33, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.3 mi upstream from mouth and 6.5 mi northeast of Carnation.

DRAINAGE AREA.--29.6 mi².

PERIOD OF RECORD.--March 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 670 ft, from topographic map.

REMARKS.--Records good. Flow regulated by South Fork Tolt Reservoir 6.1 mi upstream, capacity, 57,830 acre-ft. During the 1983 water year the Seattle Water Department diverted an average daily discharge of about 72 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,070 ft³/s Jan. 10, 1983, gage height, 6.11 ft; minimum, 36 ft³/s Aug. 28, 29, 1982, gage height, 2.75 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft³/s Jan. 10, gage height, 6.11 ft; minimum, 49 ft³/s June 9, 10, gage height, 2.82 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	92	96	90	100	128	107	71	68	68	63	78
2	57	86	96	91	96	102	111	72	62	75	63	105
3	57	97	232	96	95	99	109	73	54	72	62	76
4	54	85	198	140	93	96	105	72	54	68	61	70
5	54	84	149	353	91	96	101	73	52	65	60	71
6	88	84	299	420	91	99	99	81	51	64	59	64
7	72	83	556	615	95	101	99	79	51	62	58	63
8	74	80	592	735	90	118	96	79	51	62	57	78
9	71	79	588	680	91	143	95	81	49	61	56	124
10	68	78	462	830	91	137	97	79	64	60	55	119
11	67	76	215	655	91	126	101	78	57	58	67	114
12	66	75	223	470	91	119	97	77	58	107	63	100
13	66	75	250	338	101	114	94	75	56	270	59	93
14	65	74	386	270	102	109	93	75	54	455	58	87
15	66	74	596	225	99	107	90	82	56	438	56	101
16	71	79	377	182	101	102	89	77	54	323	55	114
17	77	133	143	377	103	99	88	76	55	219	55	113
18	73	123	135	615	105	96	88	88	58	152	53	117
19	71	134	129	610	111	95	87	81	59	109	52	177
20	69	129	125	615	112	93	85	78	58	85	57	158
21	69	115	121	610	107	91	87	77	58	78	52	141
22	75	107	117	600	111	91	82	76	57	74	51	141
23	75	101	112	600	118	91	73	75	62	72	50	141
24	72	96	108	596	135	88	77	74	59	70	50	140
25	72	92	105	371	126	88	75	73	58	70	50	138
26	89	89	105	107	121	88	74	72	57	73	50	138
27	79	86	100	121	115	88	73	71	57	72	50	137
28	83	96	97	115	109	89	71	70	56	75	50	135
29	89	94	94	109	---	107	71	70	57	69	50	135
30	83	94	90	106	---	113	71	68	63	68	53	105
31	83	---	90	103	---	112	---	68	---	65	51	---
TOTAL	2208	2790	6986	11845	2891	3225	2685	2341	1705	3659	1721	3373
MEAN	71.2	93.0	225	382	103	104	89.5	75.5	56.8	118	55.5	112
MAX	89	134	596	830	135	143	111	88	68	455	67	177
MIN	53	74	90	90	90	88	71	68	49	58	50	63
AC-FT	4380	5530	13860	23490	5730	6400	5330	4640	3380	7260	3410	6690

WTR YR 1983 TOTAL 45429 MEAN 124 MAX 830 MIN 49 AC-FT 90110

12146500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'45", long 121°49'22", in SE¼NE¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft downstream from the forks, 0.4 mi upstream from Stossel Creek, 5.5 mi northeast of Carnation, and at mile 8.7.

DRAINAGE AREA.--81.4 mi^2.

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt." Chemical analyses July 1960 to September 1970.

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage, and Oct. 31, 1928 to Jan. 3, 1932, water-stage recorder at site 350 ft upstream at datum 7.1 ft higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft higher.

REMARKS.--Records excellent. Some regulation by South Fork Reservoir, capacity, 57,830 acre-ft. During the current water year city of Seattle Water Department diverted an average daily discharge of about 72 ft^3/s above station for municipal use.

AVERAGE DISCHARGE.--49 years (water years 1929-31, 1938-83), 593 ft^3/s, 429,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft^3/s Dec. 15, 1959, gage height, 13.04 ft; minimum, 53 ft^3/s Sept. 22, 23, 1951, gage height, 3.84 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	1045	5,110	9.43	Jan. 8	0345	5,410	9.58
Jan. 5	1230	*5,690	*9.72	July 13	1115	3,430	8.52

Minimum discharge, 157 ft^3/s Aug. 26-29, gage height, 4.45 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	151	724	458	288	392	477	510	299	273	360	255	476
2	193	416	436	304	369	443	524	294	286	521	246	1120
3	230	345	3420	373	349	404	468	310	289	498	235	425
4	187	472	1550	940	333	386	427	289	244	342	229	337
5	168	590	809	3710	320	374	405	295	221	289	221	296
6	214	503	783	1860	323	439	390	395	213	264	213	258
7	327	392	968	3430	340	499	389	402	210	244	208	256
8	336	328	1040	3700	315	826	367	375	224	235	205	256
9	344	291	1000	1930	336	1310	353	368	218	235	205	539
10	278	270	624	2910	363	967	360	330	458	224	200	776
11	218	254	484	1830	428	717	371	299	335	213	322	690
12	198	246	618	1130	532	585	351	301	318	946	328	435
13	186	236	918	912	650	532	339	305	255	2230	232	348
14	178	225	917	770	554	505	333	309	241	1190	210	304
15	172	226	1270	683	470	491	332	411	280	1080	200	294
16	209	340	1480	609	557	440	336	335	249	776	195	315
17	322	1230	853	842	630	403	337	295	267	580	190	362
18	249	747	725	1150	629	376	358	416	392	467	185	408
19	215	688	621	1190	553	354	412	368	467	380	180	415
20	198	619	562	1150	598	339	403	339	376	339	175	347
21	199	484	534	1080	540	326	402	353	295	318	173	303
22	384	407	495	1040	724	339	339	325	267	305	171	293
23	336	359	448	1130	867	359	310	339	302	280	166	291
24	249	328	412	1110	910	332	403	339	299	267	168	279
25	222	306	393	829	702	315	341	332	273	264	164	285
26	424	296	386	508	619	305	313	315	264	408	162	273
27	357	316	360	691	547	312	298	302	244	360	157	297
28	388	529	334	624	485	325	288	325	232	456	164	276
29	481	499	319	503	---	594	293	346	227	322	178	269
30	330	451	307	457	---	673	293	308	349	286	190	252
31	353	---	298	421	---	593	---	273	---	267	175	---
TOTAL	8296	13117	24022	38163	14435	15340	11045	10292	8568	14948	6302	11475
MEAN	268	437	775	1231	516	495	368	332	286	482	203	383
MAX	481	1230	3420	3710	910	1310	524	416	467	2230	328	1120
MIN	151	225	298	288	315	305	288	273	210	213	157	252
AC-FT	16460	26020	47650	75700	28630	30430	21910	20410	16990	29650	12500	22760

CAL YR 1982 TOTAL 211048 MEAN 578 MAX 6160 MIN 114 AC-FT 418600
WTR YR 1983 TOTAL 176003 MEAN 482 MAX 3710 MIN 151 AC-FT 349100

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW¼SW¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft downstream from highway bridge, 1.3 mi northwest of Carnation, 1.9 mi downstream from Tolt River, and at mile 23.0.

DRAINAGE AREA.--603 mi².

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-33(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft higher.

REMARKS.--Records good. During the 1983 water year, Seattle Water Department diverted an average daily discharge of 69 ft³/s upstream from station for municipal use. Several small diversions for irrigation and domestic use upstream from station. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river upstream from station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

AVERAGE DISCHARGE.--55 years, 3,782 ft³/s, 85.17 in/yr, 2,740,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft³/s Feb. 27, 1932, elevation, 59.88 ft, from graph based on gage readings; maximum elevation observed, 59.93 ft Nov. 13, 1932; minimum discharge, 239 ft³/s Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily discharge, 396 ft³/s Sept. 24, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Elevation (ft)	Date	Time	Discharge (ft³/s)	Elevation (ft)
Dec. 4	0900	*35,300	*57.30	Jan. 8	1600	32,100	56.82

Minimum discharge, 840 ft³/s Aug. 28, elevation, 43.95 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	4400	2750	1900	2590	3260	4090	2820	3540	2420	1790	1550
2	1320	3520	2710	1910	2380	3060	4210	2950	3240	3660	1700	5950
3	1830	2700	11700	2210	2210	2820	3900	3090	3150	3960	1590	3950
4	1700	2720	29200	3670	2060	2700	3430	2980	2770	3010	1510	2660
5	1430	4130	12100	15400	1950	2700	3130	2970	2460	2590	1460	2320
6	1340	5570	6840	19000	1890	2900	2950	3580	2270	2340	1430	1950
7	2370	4110	5560	17400	2020	3070	2890	3850	2440	2100	1390	1880
8	3340	3210	4820	28000	1900	4340	2790	3580	2830	1900	1330	1740
9	3430	2620	4280	18400	1890	8420	2560	3130	2920	1780	1280	2070
10	3010	2270	3780	14800	2060	9200	2460	2760	3270	1650	1230	2780
11	2440	2010	3100	13400	2340	7180	2430	2410	3900	1600	1590	8400
12	2030	1830	3150	8380	2730	5450	2270	2410	3210	3010	2420	4620
13	1740	1760	4410	6420	3590	4820	2130	2550	2620	8320	1790	3150
14	1540	1630	4320	5270	3820	4320	2030	2740	2330	9780	1510	2510
15	1420	1520	5130	4540	3340	3960	1980	3300	3010	9980	1390	2180
16	1330	1690	6800	4000	3540	3540	2030	3090	3120	7560	1310	1970
17	2020	5500	6380	3910	4030	3150	2140	2610	2650	5350	1240	1930
18	2120	6760	5630	4270	5150	2860	2400	2940	3910	4380	1190	1960
19	1720	5260	5330	4360	4190	2640	2940	3380	5090	3600	1160	2280
20	1530	5170	4720	4320	4000	2440	3300	3190	4820	3260	1120	1920
21	1430	4000	4300	3840	4010	2310	3530	3960	3620	3090	1090	1650
22	2320	3200	3900	3580	4000	2330	3290	3940	2950	2670	1070	1660
23	3250	2680	3480	3820	5580	2430	2880	4190	3000	2440	1020	1560
24	2260	2350	3120	3820	6540	2350	3370	4360	2980	2300	1020	1490
25	1840	2120	2860	3640	5890	2160	3290	4410	2770	2200	1020	1390
26	2340	1950	2830	3290	4810	2090	2700	4280	2560	2390	980	1330
27	2620	1910	2590	4100	4140	2050	2500	3910	2540	2200	960	1490
28	2460	2630	2370	4550	3580	2140	2300	4370	2370	2450	970	1360
29	4250	2990	2230	3640	---	3860	2370	5530	2230	2230	1030	1330
30	3250	2880	2090	3180	---	6340	2500	5360	2380	1950	1120	1290
31	2540	---	1980	2850	---	5020	---	4300	---	1830	1270	---
TOTAL	67620	95090	164460	221910	96230	115910	84790	108940	90950	108000	40980	72320
MEAN	2181	3170	5305	7158	3437	3739	2826	3514	3032	3484	1322	2411
MAX	4250	6760	29200	28000	6540	9200	4210	5530	5090	9980	2420	8400
MIN	1320	1520	1980	1900	1890	2050	1980	2410	2230	1600	960	1290
CFSM	3.62	5.26	8.80	11.9	5.70	6.20	4.69	5.83	5.03	5.78	2.19	4.00
IN.	4.17	5.87	10.15	13.69	5.94	7.15	5.23	6.72	5.61	6.66	2.53	4.46
AC-FT	134100	188600	326200	440200	190900	229900	168200	216100	180400	214200	81280	143400

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CAL YR 1982   TOTAL   1469960   MEAN   4027   MAX   34300   MIN   730   CFSM   6.68   IN.   90.68   AC-FT   2916000
WTR YR 1983   TOTAL   1267200   MEAN   3472   MAX   29200   MIN   960   CFSM   5.76   IN.   78.18   AC-FT   2513000
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12150800 SNOHOMISH RIVER NEAR MONROE, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°49'52", long 122°02'50", in NE¼NW¼ sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft upstream from State Highway 522 bridge, 0.1 mi downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi southwest of Monroe, and 6.0 mi south of Snohomish.

DRAINAGE AREA.--1,537 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in Washington office.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft National Geodetic Vertical Datum of 1929. Prior to February 1963, crest-stage gage only at site about 800 ft downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft upstream, both National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Some regulation by powerplant at Snoqualmie Falls, 40 mi upstream, and by Spada Lake, 30 mi upstream. Minor diversions for irrigation returned to river above gage. During the current water year, city of Seattle Water Department diverted an average daily discharge of about 69 ft³/s above station for municipal use and the city of Everett diverted an average daily discharge of 91 ft³/s above the station for municipal use.

AVERAGE DISCHARGE.--20 years, 9,864 ft³/s, 87.15 in/yr, 7,146,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum stage, 35.8 ft Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge since February 1963, 115,000 ft³/s Dec. 4, 1975, gage height, 22.92 ft; minimum, 1,140 ft³/s Sept. 29, 1967, Sept. 17, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft³/s. Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 33,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0500	*68,900	*17.38	Jan. 8	1400	65,300	16.66
Jan. 5	2100	47,200	13.04				

Minimum discharge, 2,010 ft³/s Aug. 27, 28, gage height, 1.32 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2930	9080	7120	4500	7580	8740	10300	8680	12500	7170	4500	3220
2	2870	8660	6800	4360	6490	8170	9990	8750	10800	9330	4270	11100
3	3860	6730	29700	4940	5760	7910	9520	8310	9690	11100	3950	10400
4	3930	6440	58600	6480	5390	7400	8550	8090	8800	8920	3600	6920
5	3280	8720	37700	30900	5060	6760	7800	8020	7930	7850	3420	5550
6	3010	12400	24400	36500	4870	7060	7320	8960	7260	7350	3320	4720
7	4810	10400	18000	36900	5110	7400	6920	9710	7790	6950	3200	4010
8	7350	8260	14300	60300	4930	10500	6890	9490	9070	5890	3100	3720
9	6830	7230	11800	52500	4960	21200	6430	8870	9560	5310	3100	4350
10	6790	6410	10100	49500	5330	28000	6050	7870	10200	4890	3080	4940
11	5940	6360	8600	45100	5740	21400	6150	6730	11900	4760	3460	16500
12	5230	5890	8290	29300	6860	15700	5880	6750	9280	8530	4950	11300
13	4570	5600	11100	21500	9060	13100	5530	7010	7900	22800	4150	7930
14	4130	5130	11300	17000	9710	11600	5260	7750	7250	27100	3480	6390
15	3750	4070	12400	13700	8640	10500	5120	8530	8940	23400	3200	5180
16	3280	4460	16300	11700	8810	9290	5200	8250	9460	19600	3000	4690
17	4560	9750	18200	10700	9960	8180	5500	7370	8510	13900	2820	4430
18	5200	17700	16000	10400	13400	7480	6110	7760	10000	12400	2700	4390
19	4460	13700	14000	9940	11500	6870	7960	8950	14600	10300	2580	4880
20	3940	12600	12200	9710	10400	6370	9360	8850	13800	9240	2500	4240
21	3770	9650	10500	8510	10600	6220	9980	10900	10800	8740	2440	3740
22	5210	7740	9400	7820	10300	7040	9120	11300	9090	7960	2330	3430
23	8020	6590	8250	8200	14400	7080	8630	12300	8690	7450	2270	3390
24	6390	6130	7470	8350	18100	6230	9760	13500	8230	7090	2240	3200
25	5370	5500	6780	8290	17000	5750	9740	14500	7980	6700	2180	3060
26	6130	5100	6680	7900	13500	5450	8360	14300	7580	6880	2110	2920
27	7520	4920	6130	9530	11600	5320	7750	13000	7530	6340	2060	3000
28	7370	6100	5650	12800	9730	5440	7330	14000	7320	6130	2080	3050
29	9190	7300	5320	10700	---	7070	7410	17900	6930	5670	2240	2820
30	8020	7330	5020	9300	---	13000	7770	18400	7250	4950	2540	2690
31	6330	---	4790	8440	---	12400	---	15300	---	4600	2780	---
TOTAL	164040	235950	422900	565770	254790	304630	227890	320100	276640	299300	93650	160160
MEAN	5292	7865	13640	18250	9100	9827	7596	10330	9221	9655	3021	5339
MAX	9190	17700	58600	60300	18100	28000	10300	18400	14600	27100	4950	16500
MIN	2870	4070	4790	4360	4870	5320	5120	6730	6930	4600	2060	2690
CFSM	3.44	5.12	8.87	11.9	5.92	6.39	4.94	6.72	6.00	6.28	1.97	3.47
IN.	3.97	5.71	10.24	13.69	6.17	7.37	5.52	7.75	6.70	7.24	2.27	3.88
AC-FT	325400	468000	838800	1122000	505400	604200	452000	634900	548700	593700	185800	317700

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CAL YR 1982    TOTAL   3886620   MEAN   10650   MAX   69600   MIN   1930   CFSM  6.93   IN.  94.07   AC-FT   7709000
WTR YR 1983    TOTAL   3325820   MEAN    9112   MAX   60300   MIN   2060   CFSM  5.93   IN.  80.49   AC-FT   6597000
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WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1974 to January 1976, July 1979 to current year.

REMARKS.--Unpublished records of temperature and suspended-sediment concentration are available in the Washington Office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
DEC , 1982											
01...	1140	7180	45	7.4	6.5	4.4	11.8	97	K53	120	16
FEB , 1983											
23...	1215	14400	33	E7.2	9.0	5.3	11.4	100	K63	120	13
MAY											
18...	1120	7510	32	7.1	10.5	1.0	11.5	--	<1	120	12
AUG											
10...	1200	3000	48	7.2	18.5	1.6	9.8	--	K65	K96	18

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
DEC , 1982											
01...	0	4.8	1.0	1.9	20	.2	.60	18	6.0	1.7	<.10
FEB , 1983											
23...	0	3.8	.80	1.5	20	.2	.40	15	4.0	.70	<.10
MAY											
18...	0	3.8	.67	1.4	19	.2	.50	15	2.8	1.0	<.10
AUG											
10...	0	5.4	1.2	2.1	19	.2	.60	21	3.0	1.6	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
DEC , 1982											
01...	6.7	28	34	.04	543	.47	.060	.50	.030	.010	<.010
FEB , 1983											
23...	6.3	26	27	.04	1010	.28	.130	.30	.040	.020	<.010
MAY											
18...	5.7	19	25	.03	385	.10	.100	.60	.010	.010	.010
AUG											
10...	6.4	24	33	.03	194	.11	.070	.80	.040	.020	<.010

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

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12150800 SNOHOMISH RIVER NEAR MONROE, WA--Continued

WATER QUALITY DATA, OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
DEC , 1982											
01...	40	1	8	<.5	<1	<1	<3	4	55	<1	10
FEB , 1983											
23...	40	1	9	<.5	<1	<1	<3	8	57	<1	<4
MAY											
18...	20	1	9	<.5	<1	<1	<3	3	31	2	9
AUG											
10...	10	1	9	<.5	<1	<1	<3	3	61	5	12

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
DEC , 1982											
01...	12	<.1	<10	<1	<1	<1	24	<6	4	5	97
FEB , 1983											
23...	11	<.1	<10	<1	1	<1	18	<6	13	41	1590
MAY											
18...	5	<.1	<10	<1	<1	<1	18	<6	7	22	446
AUG											
10...	8	<.1	<10	<1	<1	<1	26	<6	8	2	16

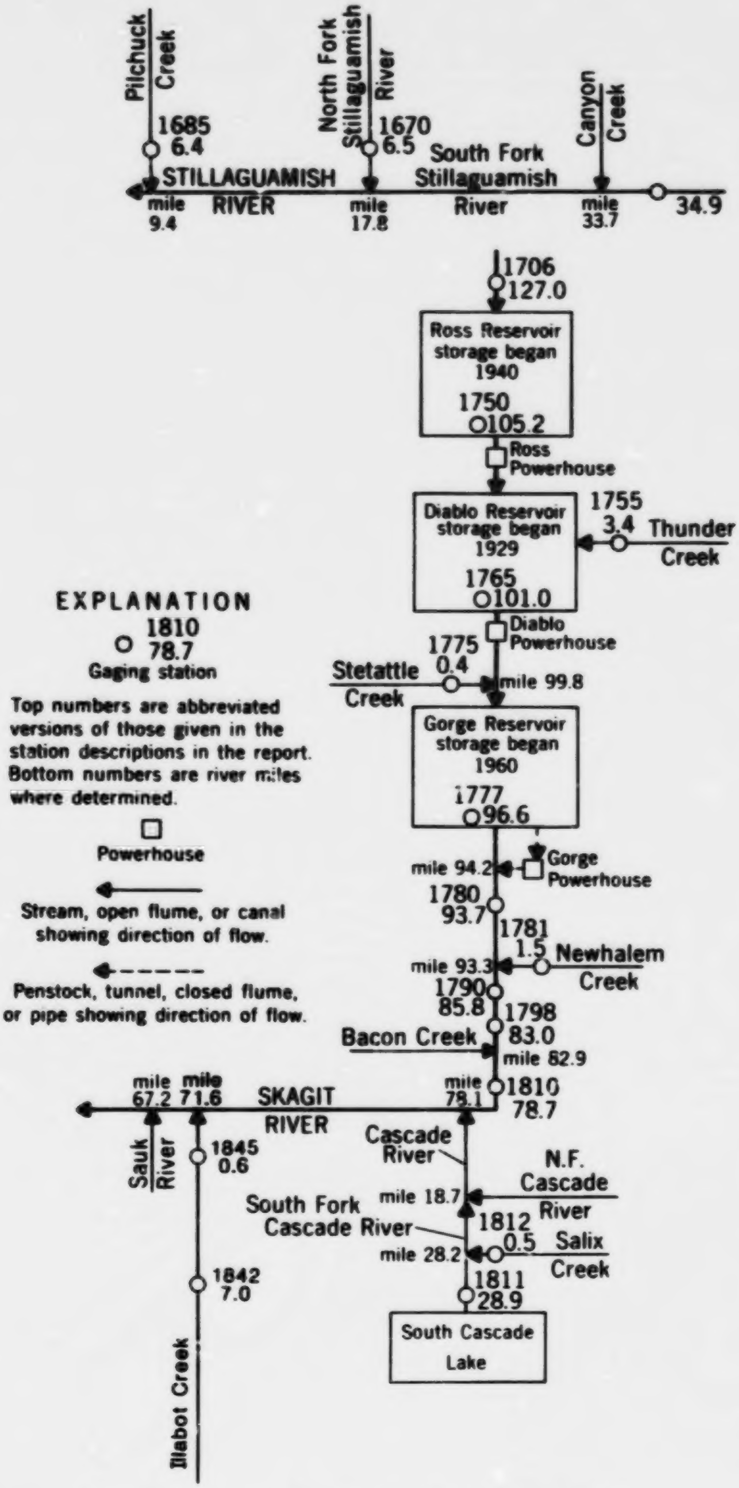
Pilchuck Creek
1685
6.4
North Fork Stillaguamish River
1670
6.5
Canyon Creek
STILLAGUAMISH RIVER
mile 9.4
mile 17.8
South Fork Stillaguamish River
mile 33.7
34.9
1706
127.0
Ross Reservoir storage began 1940
1750
105.2
Ross Powerhouse
Diablo Reservoir storage began 1929
1765
101.0
1755
3.4
Thunder Creek
Diablo Powerhouse
1775
0.4
Stetattle Creek
mile 99.8
Gorge Reservoir storage began 1960
1777
96.6
mile 94.2
Gorge Powerhouse
1780
93.7
1781
1.5
Newhalem Creek
mile 93.3
1790
85.8
1798
83.0
Bacon Creek
mile 82.9
mile 78.1
1810
78.7
mile 67.2
mile 71.6
SKAGIT RIVER
Sauk River
1845
0.6
1842
7.0
Illabot Creek
Cascade River
N.F. Cascade River
mile 18.7
South Fork Cascade River
1812
0.5
Salix Creek
mile 28.2
1811
28.9
South Cascade Lake
EXPLANATION
1810
78.7
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 16.—Gaging stations in Stillaguamish and Skagit River (above Sauk River) basins.

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12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--Lat 48°15'42", long 122°02'47", in SW¼NW¼ sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi southeast of Arlington, 7.8 mi downstream from Deer Creek, and at mile 6.5.

DRAINAGE AREA.--262 mi².

PERIOD OF RECORD.--July 1928 to current year. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. No regulation. Small diversions for domestic use. National Weather Service radio telemeter at station.

AVERAGE DISCHARGE.--55 years, 1,905 ft³/s, 98.74 in/yr, 1,380,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,300 ft³/s Dec. 3, 1982, gage height, 13.89 ft; minimum discharge, 117 ft³/s Sept. 23, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2200	*36,300	*13.89	Jan. 10	1300	33,400	13.41
Jan. 8	0600	24,900	11.79	July 13	1400	20,400	10.87

Minimum discharge, 315 ft³/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323	2380	2170	1010	1540	1950	2640	1160	1080	1090	665	992
2	399	1300	1770	1020	1410	1830	2310	1060	975	2860	645	3380
3	489	1040	20800	1810	1290	1670	2020	1040	915	1920	618	1260
4	394	1540	12500	3190	1200	1540	1760	1010	835	1370	587	907
5	357	3150	4370	16200	1130	1420	1570	1020	769	1150	568	754
6	394	4170	3070	6070	1080	1710	1480	1270	733	1040	556	645
7	2200	2660	2370	7150	1250	1760	1360	1530	776	932	545	599
8	1190	1900	1990	16200	1140	3650	1250	1540	842	850	534	562
9	813	1490	1740	6270	1330	6850	1150	1370	858	835	534	671
10	692	1260	1560	26300	1610	4870	1120	1150	2370	754	517	1140
11	606	1110	1410	9830	2810	3650	1160	1020	2770	866	638	2920
12	534	1000	2420	4950	4950	2520	1130	1030	1660	5860	762	1420
13	484	915	2870	3570	5600	2310	1060	1010	1180	11700	574	983
14	452	842	2200	2780	3630	2810	1010	1070	1010	6120	534	791
15	432	813	2710	2310	2920	2680	983	1420	1500	4830	511	692
16	447	1810	5620	2040	3270	2100	1000	1150	1400	2930	494	638
17	1180	2890	4170	2060	3600	1760	1010	1040	1740	2040	478	593
18	882	2390	4470	2150	4430	1530	1050	1300	4260	1660	467	651
19	658	2270	3450	2380	2890	1380	1170	1210	3820	1370	457	638
20	574	2130	2610	2140	3150	1250	1260	1110	2300	1430	452	545
21	551	1740	2310	1780	3030	1170	1300	1250	1840	1250	442	511
22	2440	1390	2280	1580	2950	1170	1180	1190	1430	1060	432	489
23	1900	1200	1960	2130	4490	1270	1100	1280	1420	966	427	473
24	1300	1080	1700	2170	4740	1150	1430	1330	3040	899	422	457
25	1010	983	1570	2180	3360	1040	1320	1360	1910	827	418	447
26	2150	1020	1620	2520	2800	983	1190	1260	1510	805	408	442
27	2750	1290	1390	4190	2280	1050	1130	1200	1300	791	399	478
28	2280	3600	1260	3530	1990	1130	1010	1290	1150	941	408	442
29	1780	3230	1170	2390	---	2380	1020	1480	1070	776	494	432
30	1260	2530	1100	1990	---	3350	1030	1520	1120	705	517	418
31	1300	---	1050	1730	---	3500	---	1270	---	678	484	---
TOTAL	32221	55123	101680	145620	75870	67433	39203	37940	47583	61305	15987	25370
MEAN	1039	1837	3280	4697	2710	2175	1307	1224	1586	1978	516	846
MAX	2750	4170	20800	26300	5600	6850	2640	1540	4260	11700	762	3380
MIN	323	813	1050	1010	1080	983	983	1010	733	678	399	418
CFSM	3.97	7.01	12.5	17.9	10.3	8.30	4.99	4.67	6.05	7.55	1.97	3.23
IN.	4.57	7.83	14.44	20.68	10.77	9.57	5.57	5.39	6.76	8.70	2.27	3.60
AC-FT	63910	109300	201700	288800	150500	133800	77760	75250	94380	121600	31710	50320

CAL YR 1982 TOTAL 797837 MEAN 2186 MAX 27700 MIN 323 CFSM 8.34 IN. 113.28 AC-FT 1583000
WTR YR 1983 TOTAL 705335 MEAN 1932 MAX 26300 MIN 323 CFSM 7.37 IN. 100.15 AC-FT 1399000

12168500 PILCHUCK CREEK NEAR BRYANT, WA

LOCATION.--Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, on right bank 500 ft upstream from bridge on State Highway 9, 1.8 mi north of Bryant, and at mile 6.4.

DRAINAGE AREA.--52.0 mi².

PERIOD OF RECORD.--March 1929 to September 1931, June 1950 to September 1951, September 1952 to September 1975, June 1980 to current year (seasonal records only).

REVISED RECORDS.--WSP 1316: 1930-31(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 119.8 ft National Geodetic Vertical Datum of 1929 (stadia traverse). Prior to Oct. 1, 1931, nonrecording gage at site 100 ft downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--26 years (water years 1930, 1931, 1951, 1953-75), 281 ft³/s, 73.38 in/yr, 203,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft³/s Jan. 30, 1971, gage height, 8.20 ft, from high-water mark in well, from rating curve extended above 3,900 ft³/s; minimum observed, 0.5 ft³/s Aug. 29 to Sept. 1, 1931, gage height, 0.90 ft, site and datum then in use.

EXTREMES FOR JUNE TO OCTOBER.--Maximum discharge, 1,960 ft³/s July 2, gage height, 4.93 ft; minimum, 14 ft³/s on all or part of each day Aug. 26-28, minimum gage height, 1.87 ft Aug. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JUNE 1983 TO OCTOBER 1984
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	23	103	68	232	38
2	26	853	63	837	35
3	32	428	60	228	64
4	28	243	55	174	289
5	23	167	51	123	101
6	21	136	47	94	68
7	27	117	43	83	56
8	25	105	41	73	49
9	20	93	39	72	43
10	207	84	37	225	40
11	235	83	50	430	36
12	250	647	93	185	34
13	145	915	60	122	33
14	92	904	47	95	31
15	130	866	40	80	31
16	135	446	32	72	29
17	274	277	30	72	37
18	779	284	27	79	51
19	558	195	26	82	39
20	344	289	24	66	45
21	249	246	23	59	57
22	163	169	20	53	360
23	187	135	19	49	205
24	365	116	17	45	111
25	250	104	15	43	88
26	176	100	14	43	71
27	138	107	14	72	64
28	114	172	15	54	62
29	102	109	32	45	55
30	105	87	61	41	110
31	---	76	49	---	276
TOTAL	5223	8656	1212	3928	2608
MEAN	174	279	39.1	131	84.1
MAX	779	915	93	837	360
MIN	20	76	14	41	29
CFSM	3.35	5.37	.75	2.52	1.62
IN.	3.74	6.19	.87	2.81	1.87
AC-FT	10360	17170	2400	7790	5170

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA
(International gaging station)

LOCATION.--Lat 48°43'58", long 121°04'02", in SE¼ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005. Ross Lake National Recreation Area, at Ross Dam on Skagit River, 1.0 mi downstream from Ruby Creek, 9.1 mi northeast of Newhalem, and at mile 105.2.

DRAINAGE AREA.--999 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1945, published as "Ruby Reservoir near Newhalem."

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 0.00 ft city of Seattle Ross Dam datum; 1.79 ft National Geodetic Vertical Datum of 1929; and [illegible].88 ft Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site above Ross Dam at same datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft above dam at present datum.

REMARKS.--Reservoir is formed by concrete-arch dam completed to elevation 1,615 ft in 1949, storage began Mar. 11, 1940. Starting about July 1, 1967, taintor gates were extended to elevation 1,602.50 ft. Usable storage, 1,052,300 acre-ft between elevations 1,475 ft, lower limit of operation, and 1,602.5 ft, top of taintor gates. Dead storage below elevation 1,250 ft, 1,175 acre-ft. Water used by city of Seattle for power development. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by city of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,443,460 acre-ft July 20, 1981, elevation, 1,603.23 ft; minimum observed since dam was completed in 1949, 51,760 acre-ft Apr. 5, 1952, elevation, 1,348.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,435,107 acre-ft July 14, elevation, 1,602.53 ft; minimum, 613,502 acre-ft Apr. 20, elevation, 1,516.17 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by city of Seattle in 1943)

1,474	378,000	1,525	679,000	1,575	1,130,200
1,500	509,200	1,550	888,300	1,603	1,440,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1598.33	1595.15	1586.73	1575.35	1565.38	1545.70	1528.38	1522.75	1564.65	1596.13	1602.33	1601.67
2	1598.36	1594.91	1586.28	1574.80	1564.48	1545.09	1527.90	1523.28	1566.83	1596.80	1602.29	1601.59
3	1598.41	1594.66	1587.53	1574.13	1563.65	1544.35	1527.47	1524.12	1568.62	1597.44	1602.21	1601.48
4	1598.34	1594.71	1588.58	1573.63	1562.83	1543.53	1527.06	1524.86	1570.09	1597.89	1602.07	1601.33
5	1598.11	1594.76	1589.12	1573.42	1561.46	1543.00	1526.55	1525.36	1571.41	1598.50	1601.82	1601.21
6	1597.87	1594.79	1589.16	1572.91	1560.58	1542.67	1526.01	1526.09	1572.61	1598.94	1601.82	1600.94
7	1597.75	1594.94	1589.07	1572.70	1559.56	1541.78	1525.34	1526.59	1574.00	1599.17	1601.89	1600.85
8	1597.53	1594.63	1588.87	1572.74	1558.09	1540.95	1524.64	1527.12	1575.66	1599.16	1601.80	1600.65
9	1597.58	1594.47	1588.68	1572.76	1557.10	1540.97	1523.61	1527.38	1577.28	1599.23	1602.02	1600.00
10	1597.58	1594.23	1588.33	1573.76	1556.32	1541.02	1522.78	1527.67	1579.02	1599.32	1602.29	1599.73
11	1597.41	1593.96	1587.83	1574.36	1555.53	1541.31	1521.82	1527.32	1580.36	1599.63	1602.29	1599.93
12	1597.28	1593.60	1587.45	1574.64	1554.90	1541.17	1520.87	1527.30	1581.27	1601.54	1602.02	1599.68
13	1597.12	1593.44	1586.95	1574.38	1554.26	1540.82	1519.92	1527.54	1582.08	1602.44	1601.86	1599.18
14	1596.98	1593.56	1586.38	1574.06	1553.51	1540.32	1518.93	1528.13	1582.80	1602.47	1601.88	1598.65
15	1596.81	1593.21	1585.72	1573.88	1552.65	1540.03	1517.64	1528.77	1583.94	1602.22	1601.86	1598.18
16	1596.78	1592.96	1585.44	1573.59	1551.79	1539.69	1517.18	1528.77	1584.95	1602.23	1601.83	1597.73
17	1597.01	1592.76	1585.16	1573.35	1551.09	1539.22	1517.04	1529.29	1586.40	1602.26	1601.71	1597.69
18	1596.66	1592.44	1584.96	1572.97	1550.56	1538.83	1516.53	1529.88	1587.72	1602.22	1601.57	1597.59
19	1596.40	1592.21	1584.74	1572.24	1550.18	1538.51	1516.20	1530.54	1588.73	1602.07	1601.55	1597.15
20	1596.04	1591.96	1584.16	1571.56	1549.81	1538.28	1516.20	1531.55	1589.36	1602.16	1601.65	1596.72
21	1595.78	1591.37	1583.69	1571.12	1549.29	1537.62	1516.52	1533.48	1589.88	1602.14	1601.77	1596.30
22	1596.16	1590.17	1583.29	1570.87	1548.85	1536.95	1516.91	1535.75	1590.43	1602.15	1601.83	1595.93
23	1596.48	1589.43	1582.71	1570.88	1548.53	1536.40	1517.91	1538.13	1590.95	1602.16	1601.69	1595.38
24	1596.86	1588.81	1582.04	1570.46	1548.26	1535.92	1519.23	1540.74	1591.49	1602.09	1601.56	1595.06
25	1596.85	1588.44	1581.42	1569.99	1547.96	1535.42	1519.70	1543.01	1592.17	1601.93	1601.46	1594.75
26	1596.74	1587.95	1580.42	1569.63	1547.69	1535.07	1520.23	1545.08	1592.90	1601.70	1601.49	1594.41
27	1596.60	1587.84	1579.56	1569.27	1547.26	1534.30	1520.77	1547.23	1593.53	1601.64	1601.49	1594.04
28	1596.28	1587.72	1578.73	1568.65	1546.38	1532.71	1520.98	1550.35	1594.18	1601.69	1601.72	1593.55
29	1595.94	1587.47	1577.84	1567.82	---	1531.49	1521.26	1554.32	1594.94	1601.81	1601.75	1593.08
30	1595.70	1587.14	1576.94	1567.19	---	1530.51	1522.07	1558.59	1595.57	1601.92	1601.77	1592.67
31	1595.48	---	1576.20	1566.62	---	1529.30	---	1562.11	---	1602.26	1601.60	---
TOTAL	49507.22	47763.69	49123.98	48733.83	43517.95	47702.93	45637.65	47553.10	47493.82	49623.31	49656.89	47937.22
MEAN	1597.01	1592.12	1584.64	1572.06	1554.21	1538.80	1521.26	1533.97	1583.13	1600.75	1601.84	1597.91
MAX	1598.41	1595.15	1589.16	1575.35	1565.38	1545.70	1528.38	1562.11	1595.57	1602.47	1602.33	1601.67
MIN	1595.48	1587.14	1576.20	1566.62	1546.38	1529.30	1516.20	1522.75	1564.65	1596.13	1601.46	1592.67
†	1353272	1260040	1142700	1044938	856214	712621	656648	1000867	1354298	1431894	1424080	1321504
‡	-33004	-93232	-117340	-97762	-188724	-143593	-55973	+344219	+353431	+77596	-7814	-102576

CAL YR 1982.......................‡ +21236
WTR YR 1983.......................‡ -64772

† Contents, in acre-feet, on last day of month.
‡ Change in contents, in acre-feet.

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12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22", long 121°04'18", in SE¼ sec.23, T.37 N., R.13 E., (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from high-water line of Diablo Reservoir, 9.0 mi east of Newhalem, and at mile 3.4.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft, from river-profile map.

REMARKS.--Records good. No regulation or diversion above station. Large diurnal fluctuations caused by snowmelt during summer months.

AVERAGE DISCHARGE.--53 years, 616 ft³/s, 79.67 in/yr, 446,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s Dec. 26, 1980, gage height, 14.5 ft, from rating curve extended above 3,500 ft³/s; minimum not determined, probably less than 50 ft³/s during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	1945	2,940	7.57	July 13	1215	*6,420	*10.26
May 29	2345	3,440	8.04	Aug. 11	0115	2,560	7.19

Minimum daily discharge, 145 ft³/s Jan. 3, during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	325	303	197	149	207	309	227	504	1990	1060	1580	1300
2	393	280	194	147	197	295	220	536	1750	1100	1220	1400
3	351	269	1240	145	191	281	210	528	1470	876	1030	1050
4	307	288	1160	147	183	270	202	527	1260	873	918	890
5	232	309	590	195	177	259	197	552	1140	1050	990	750
6	287	319	434	197	175	253	200	541	1170	1060	1020	640
7	343	294	354	242	171	250	205	512	1430	316	1100	520
8	300	274	315	730	165	262	202	464	1750	701	1460	400
9	297	256	288	514	163	463	200	412	1640	659	1640	350
10	351	246	265	1010	161	575	195	380	1630	658	1980	580
11	405	238	252	900	187	531	189	392	1230	1610	2030	996
12	387	231	245	640	237	462	185	444	1020	4440	1310	560
13	387	225	235	506	250	414	184	519	932	4720	1180	514
14	487	216	222	418	247	378	176	577	1050	3010	1210	506
15	489	215	220	369	240	351	178	530	1460	1860	1050	434
16	439	215	258	336	240	324	191	481	1220	1230	894	458
17	393	224	258	312	288	303	216	480	2020	1090	870	378
18	330	220	245	291	339	288	259	474	1600	1120	846	333
19	297	215	235	282	312	270	325	526	1110	1140	882	282
20	280	215	225	265	297	260	384	706	897	1210	810	255
21	280	209	217	258	282	252	449	1050	790	1100	756	258
22	804	195	207	245	276	247	458	1210	789	1150	798	303
23	621	189	197	237	324	242	476	1330	900	1330	882	327
24	471	190	189	230	400	235	581	1440	861	1380	846	327
25	390	187	183	222	419	227	547	1590	803	1140	786	312
26	424	191	177	227	383	217	466	1610	919	912	762	354
27	382	194	165	250	352	212	413	1620	1030	804	735	394
28	356	201	160	252	327	205	404	2030	1180	894	810	267
29	335	203	157	242	---	217	427	2980	1280	852	810	235
30	314	201	155	232	---	245	473	3120	1170	954	942	212
31	300	---	152	220	---	237	---	2680	---	1380	840	---
TOTAL	11807	7012	9391	10410	7190	9334	9039	30545	37491	42179	32987	15585
MEAN	381	234	303	336	257	301	301	985	1250	1361	1064	520
MAX	804	319	1240	1010	419	575	581	3120	2020	4720	2030	1400
MIN	280	187	152	145	161	205	176	380	789	658	735	212
CFSM	3.63	2.23	2.89	3.20	2.45	2.87	2.87	9.38	11.9	13.0	10.1	4.95
IN.	4.18	2.48	3.33	3.69	2.55	3.31	3.20	10.82	13.28	14.94	11.69	5.52
AC-FT	23420	13910	18630	20650	14260	18510	17930	60590	74360	83660	65430	30910

CAL YR 1982 TOTAL 234958 MEAN 644 MAX 3240 MIN 102 CFSM 6.13 IN. 83.24 AC-FT 466000
WTR YR 1983 TOTAL 222970 MEAN 611 MAX 4720 MIN 145 CFSM 5.82 IN. 79.00 AC-FT 442300

BEST COPY AVAILABLE

12177500 STETATTLE CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°43'20", long 121°08'58", in NE¼ sec.6, T.37 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on left bank 5.5 mi northeast of Newhalem, and at mile 0.4.

DRAINAGE AREA.--22.0 mi².

PERIOD OF RECORD.--December 1913 to November 1915 (fragmentary), September 1933 to current year. Published as "Near Marblemount" 1913-15.

REVISED RECORDS.--WSP 1316: 1935(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 906.53 ft city of Seattle datum. Dec. 19, 1913, to Nov. 14, 1915, nonrecording gage at site about 0.3 mi downstream at different datum. Sept. 7, 1933, to Aug. 26, 1937, water-stage recorder at site 750 ft upstream at datum 1.69 ft higher. Aug. 27, 1937, to Nov. 20, 1957, water-stage recorder at site 600 ft upstream at present datum.

REMARKS.--Records fair except for those above 1,000 ft³/s, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--50 years (water years 1934-83), 185 ft³/s, 114.20 in/yr, 134,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,540 ft³/s Dec. 26, 1980, gage height, 8.06 ft, from rating curve extended above 1,600 ft³/s; minimum, 9 ft³/s Nov. 9-11, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 970 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 22	1545	1,070	3.67	May 29	1915	1,150	3.75
Dec. 3	1515	*6,560	*6.73	July 2	0245	3,630	5.23
Jan. 8	0015	1,720	4.16				

Minimum discharge, 32 ft³/s Nov. 25, 26, gage height, 0.63 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	110	67	44	88	131	144	219	431	273	239	229
2	192	90	65	43	79	127	139	232	366	357	205	255
3	143	76	2710	42	72	122	127	220	326	247	183	150
4	104	117	913	44	65	113	115	206	285	238	161	123
5	77	122	330	124	59	106	111	218	250	255	158	99
6	83	129	260	123	56	105	112	211	286	225	158	81
7	139	113	200	421	53	108	114	198	402	176	154	74
8	120	91	168	909	49	144	110	175	494	157	175	62
9	123	75	145	342	48	488	103	148	408	155	192	56
10	152	66	125	649	47	477	95	134	601	151	212	171
11	145	59	112	497	114	353	86	142	325	980	292	161
12	114	53	94	276	216	234	78	166	254	2060	198	110
13	99	46	89	199	251	190	72	211	242	2000	163	95
14	95	40	87	156	211	180	72	238	287	931	158	85
15	86	36	90	131	192	163	77	197	429	590	140	75
16	127	37	251	114	183	141	94	176	315	339	126	80
17	156	46	209	109	248	128	123	174	626	286	117	81
18	110	49	162	108	336	118	169	179	379	272	113	73
19	91	49	146	106	232	110	218	212	259	258	110	60
20	82	49	129	102	203	104	248	358	229	295	107	52
21	99	45	110	96	183	101	278	465	206	258	101	50
22	610	39	101	89	187	99	237	452	213	252	100	51
23	261	36	89	85	301	100	239	487	242	263	103	52
24	192	35	78	83	356	99	304	530	255	261	101	51
25	122	33	71	85	282	95	246	563	245	226	92	50
26	161	35	66	94	213	91	190	530	269	192	87	51
27	108	40	58	124	167	90	162	521	292	171	86	54
28	181	57	54	133	142	88	164	693	319	196	90	48
29	141	76	50	119	---	108	180	893	332	179	100	42
30	115	73	48	108	---	177	203	808	302	185	117	39
31	105	---	46	98	---	162	---	612	---	215	106	---
TOTAL	4477	1922	7124	5653	4623	4852	4610	10570	9869	12643	4444	2660
MEAN	144	64.1	230	182	165	157	154	341	329	408	143	88.7
MAX	610	129	2710	909	356	488	304	893	626	2060	292	255
MIN	54	33	46	42	47	88	72	134	206	151	86	39
CFSM	6.55	2.91	10.5	8.27	7.50	7.14	7.00	15.5	15.0	18.5	6.50	4.03
IN.	7.57	3.25	12.05	9.56	7.82	8.20	7.80	17.87	16.69	21.38	7.51	4.50
AC-FT	8880	3810	14130	11210	9170	9620	9140	20970	19580	25080	8810	5280

CAL YR 1982 TOTAL 71372 MEAN 196 MAX 2710 MIN 19 CFSM 8.91 IN. 120.68 AC-FT 141600
WTR YR 1983 TOTAL 73447 MEAN 201 MAX 2710 MIN 33 CFSM 9.14 IN. 124.19 AC-FT 145700

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW¼SE¼ sec.21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from Newhalem Creek, 0.5 mi downstream from city of Seattle powerplant at Newhalem, 10.8 mi upstream from Bacon Creek, and at mile 93.7.

DRAINAGE AREA.--1,175 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--October 1908 to May 1914, October 1920 to current year. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi upstream at datum 91 ft higher. Nov. 15, 1920, to June 4, 1923, nonrecording gage at site about 500 ft upstream at same datum.

REMARKS.--Records excellent. Water is diverted 2.9 mi above station and is returned to river at city of Seattle powerplant 0.5 mi above station. Flow regulated by Gorge powerplant since August 1924 and by Ross Reservoir (see sta 12175000) since March 1940, Diablo Reservoir (see sta 12176500) since October 1929, and Gorge Reservoir (see sta 12177700) since June 1960, having a combined total capacity of 1,533,000 acre-ft. Satellite telemeter at station.

AVERAGE DISCHARGE.--75 years (water years 1909-83), 4,466 ft³/s, 3,236,000 acre-ft/yr, adjusted for storage in Diablo Reservoir since October 1929, Ross Reservoir since March 1940, and Gorge Reservoir since June 1960.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s Nov. 29, 1909, gage height, 22.0 ft from floodmark, site and datum then in use; minimum, 54 ft³/s Nov. 1, 1943, gage height, 78.15 ft; minimum daily, 136 ft³/s Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft, discharge about 115,000 ft³/s. Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,800 ft³/s July 13, gage height, 88.02 ft; minimum, 1,200 ft³/s Oct. 2, gage height, 81.00 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2190	4310	3290	5580	6760	6570	7350	2810	4240	3200	4560	4000
2	1660	2710	4060	4480	6840	6380	5540	3840	4110	2720	5160	4900
3	1560	2290	5710	4480	5980	6190	4910	3810	3190	1770	5850	4090
4	3030	2490	4240	4340	5960	6150	3450	3150	2890	2710	5540	3690
5	2240	2450	2710	4680	6780	5690	3630	4070	2590	2620	5180	3310
6	3100	1940	3630	3930	6930	4990	3700	3930	3100	3230	4240	3300
7	3700	1830	3910	4040	6910	5690	5010	3450	3180	3750	3570	3050
8	2890	2680	4140	7120	6890	5900	4900	3930	3490	4450	5070	2920
9	2140	3020	3850	5470	6910	5920	5770	3810	3660	4120	4340	4470
10	1430	2890	3900	6500	6650	5750	6550	3790	3750	2940	3900	4550
11	3180	3180	4560	6000	5980	5940	5780	5030	2940	5410	6230	4600
12	2950	3550	4680	5520	5640	5470	5790	5310	2920	6910	7100	3530
13	2760	1810	4860	5470	5670	5140	5390	3970	3120	11200	6020	4500
14	2590	1820	5220	5710	6650	6190	5710	3570	3100	15700	4720	5040
15	2300	3160	5810	5260	5790	6230	6460	4310	3630	13400	4090	4000
16	1710	2970	5450	4750	6320	5450	4510	4400	3390	7880	4880	3720
17	2130	2750	4380	4790	6690	5180	3850	4120	3460	6740	3840	3640
18	3750	3010	3490	4560	6870	5050	3590	3290	3430	8120	3810	3270
19	3490	3290	4560	5500	6130	4070	3730	3010	2490	7000	3720	3750
20	3180	3020	5240	6150	5090	4170	4300	2440	2830	6960	3020	3940
21	3010	5200	4670	4900	5580	5260	4160	2390	2780	6150	2110	3640
22	3570	6020	4560	3600	5870	5160	3840	2380	3230	6170	2490	3860
23	1550	6650	4880	2430	5200	5050	2760	3110	3160	6360	3790	3910
24	1220	5160	5200	4060	5500	3970	2280	4360	3640	6690	3490	4070
25	2620	3760	5580	4630	5900	4240	4240	5430	2470	7280	2940	3420
26	3840	3670	5830	4170	4880	4000	3550	5790	2320	6650	2840	3460
27	4000	1840	6820	4800	5330	4720	3510	5710	3180	5540	1820	3430
28	4240	2470	6190	6380	6060	8770	3450	3460	3060	3760	1410	3620
29	4210	2860	6290	5980	---	7790	3870	4260	3450	3910	2610	2980
30	3460	3120	5830	5810	---	7620	2440	4160	3550	3880	3000	2940
31	3600	---	5750	5180	---	7530	---	4650	---	3880	3400	---
TOTAL	87620	95920	149290	156270	171760	176230	134020	121740	96350	181100	124740	113600
MEAN	2826	3197	4816	5041	6134	5685	4467	3927	3212	5842	4024	3787
MAX	4240	6650	6820	7120	6930	8770	7350	5790	4240	15700	7100	5040
MIN	1220	1810	2710	2430	4830	3970	2280	2380	2320	1770	1410	2920
AC-FT	173800	190300	296100	310000	340700	349600	265800	241500	191100	359200	247400	225300
†	-35391	-93089	-117265	-98434	-183011	-144479	-58612	+343685	+354307	+77408	-6121	-102713
MEAN‡	2251	1634	2908	3440	2840	3335	3483	9515	9168	7099	3923	2061
AC-FT‡	138409	97211	178835	211566	157689	205121	207188	585185	545407	436608	241279	122587

CAL YR 1982 TOTAL 1708130 MEAN 4680 MAX 16400 MIN 1220 AC-FT 3388000 MEAN‡ 4704 AC-FT‡ 3405999
WTR YR 1983 TOTAL 1608640 MEAN 4407 MAX 15700 MIN 1220 AC-FT 3191000 MEAN‡ 4319 AC-FT‡ 3127285

† Change in contents, in acre-feet, for Ross, Diablo and Gorge Reservoirs.
‡ Adjusted for change in contents of Ross, Diablo, and Gorge Reservoirs.

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE¼SE¼ sec.26, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi south of Newhalem, 1.5 mi downstream from East Fork, and at mile 1.5.

DRAINAGE AREA.--27.9 mi².

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,080 ft, by barometer. Prior to October 1981, at datum 0.96 ft lower.

REMARKS.--Records good except those for period of no gage-height record, Oct. 31 to Dec. 15, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--22 years, 175 ft³/s, 85.13 in/yr, 126,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Dec. 26, 1980, gage height, 9.14 ft present datum, from floodmarks, from rating curve extended above 5,570 ft³/s on basis of slope-area measurement of peak flow; minimum, 20 ft³/s Feb. 1, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	unknown	*2,960	*6.20	May 29	2015	1,050	4.39
Jan. 8	0115	1,430	4.89	July 12	0300	2,180	5.62

Minimum discharge, 29 ft³/s Sept. 30, gage height, 1.75 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	120	90	48	77	140	125	219	418	265	245	188
2	73	105	82	49	70	134	131	219	361	348	220	237
3	91	90	1300	48	65	124	111	201	328	233	180	127
4	72	104	1000	53	58	116	101	195	273	208	150	113
5	61	168	600	167	54	104	98	213	234	225	135	93
6	56	210	320	136	53	101	99	216	259	200	128	67
7	110	170	280	367	51	103	101	208	374	158	124	65
8	94	120	185	785	48	158	95	182	495	145	132	58
9	85	90	150	332	47	503	88	155	382	151	150	56
10	92	84	118	678	48	434	84	142	542	140	180	215
11	100	77	100	504	120	326	80	156	313	517	210	279
12	88	71	105	319	206	253	75	182	253	1220	200	146
13	80	68	93	243	216	226	71	227	231	1420	165	105
14	74	66	90	194	179	212	68	242	283	1030	135	83
15	69	64	98	164	153	189	69	211	423	695	118	66
16	64	75	222	143	153	165	78	184	304	468	102	64
17	80	120	175	138	223	147	94	186	636	391	91	69
18	73	140	139	138	246	132	132	202	425	362	82	67
19	67	128	123	135	182	118	180	225	290	326	74	59
20	63	105	109	125	170	107	214	339	226	355	71	52
21	60	93	96	112	152	101	254	450	195	298	66	49
22	80	84	89	97	156	100	217	467	195	286	64	46
23	190	77	79	90	236	102	230	526	228	295	64	43
24	150	72	73	88	301	98	281	570	240	273	64	40
25	114	68	70	89	257	91	232	583	223	230	61	37
26	150	66	69	113	204	86	189	555	243	195	59	37
27	200	71	59	167	173	85	163	571	264	185	56	50
28	168	108	56	153	151	84	160	724	295	208	58	37
29	143	[illegible]	53	123	---	119	178	891	298	183	62	33
30	121	[illegible]	51	103	---	167	205	832	318	190	82	30
31	110	-	49	86	---	143	---	612	---	224	64	---
TOTAL	3032	3032	6123	5987	4049	4968	4203	10885	9549	11424	3592	2611
MEAN	97.8	101	198	193	145	160	140	351	318	369	116	87.0
MAX	200	210	1300	785	301	503	281	891	636	1420	245	279
MIN	54	64	49	48	47	84	68	142	195	140	56	30
CFSM	3.51	3.62	7.10	6.92	5.20	5.73	5.02	12.6	11.4	13.2	4.16	3.12
IN.	4.04	4.04	8.16	7.98	5.40	6.62	5.60	14.51	12.73	15.23	4.79	3.48
AC-FT	6010	6010	12140	11880	8030	9850	8340	21590	18940	22660	7120	5180

CAL YR 1982 TOTAL 68840 MEAN 189 MAX 1300 MIN 33 CFSM 6.77 IN. 91.79 AC-FT 136500
WTR YR 1983 TOTAL 69455 MEAN 190 MAX 1420 MIN 30 CFSM 6.81 IN. 92.61 AC-FT 137800

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'27", long 121°21'37", in SW¼NE¼ sec.15, T.26 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.6 mi upstream from Alma Creek, 6.8 mi northeast of Marblemount, and at mile 85.8.

DRAINAGE AREA.--1,274 mi^2, of which 400 mi^2 is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 358.8 ft National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Water-discharge records excellent. All diversions returned to river above gage. Flow regulated by Ross Reservoir (see sta 12175000), Diablo Reservoir (see sta 12176500), and Gorge Reservoir (see sta 12177700) since 1960.

AVERAGE DISCHARGE.--33 years, 5,494 ft^3/s, 3,980,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft^3/s June 21, 1967, gage height, 17.26 ft; minimum, 990 ft^3/s Dec. 29, 1957, gage height, 4.55 ft; minimum daily, 1,110 ft^3/s Oct. 7, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,300 ft^3/s July 13, gage height, 13.31 ft; minimum, 1,490 ft^3/s Oct. 6, gage height, 5.31 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2510	4990	3700	5930	7200	7250	8150	3580	5850	4390	5660	5010
2	2140	3310	4610	4850	7360	7070	6310	4740	5590	4130	5820	6060
3	1980	2860	10800	4820	6490	6820	5540	4560	4690	2910	6620	4940
4	3430	3100	7670	4710	6280	6750	4000	3890	3960	3490	6310	4310
5	2570	3160	4180	5510	7090	6290	4040	4720	3540	3550	6030	4070
6	3480	2680	4700	4770	7320	5570	4200	4810	4150	4240	5020	3930
7	4300	2460	4610	5080	7300	6240	5360	4210	4540	4490	4310	3250
8	3410	3200	4910	10400	7260	6630	5500	4640	5160	5030	5810	4050
9	2600	3510	4390	7060	7270	7760	6080	4470	5240	5170	5310	5020
10	2010	3380	4420	9380	7040	7450	7060	4240	5770	3670	4810	5150
11	3740	3630	5060	8150	6650	7280	6190	5500	4320	7250	6880	4380
12	3510	3990	5180	6870	6550	6540	6130	6200	4000	12300	8170	4550
13	3240	2220	5350	6550	6670	6030	5730	4770	4110	16100	6790	5330
14	3030	2150	5680	6570	7580	7060	6010	4410	4210	18600	5880	5420
15	2700	3440	6290	6110	6550	7060	6820	5050	5160	16600	5140	4280
16	2150	3370	6560	5490	7040	6190	5650	5090	4610	10800	4060	4110
17	2640	3180	5380	5390	7650	5900	4270	4720	5610	8040	4210	4060
18	4190	3490	4240	5190	8120	5650	4090	4070	5140	9770	4420	3710
19	3940	3700	5200	5860	7100	4520	4430	3730	3770	8270	2930	4150
20	3890	3340	5810	6910	6040	4710	5100	3530	3800	8480	3510	4270
21	3400	5530	5230	5540	6400	5730	5160	3790	3720	7330	2600	4000
22	5300	6530	5190	4080	6710	5640	4610	3870	4060	7330	2830	4200
23	2670	7010	5310	2950	6450	5780	3780	5160	4130	7530	4080	4270
24	2070	5630	5660	4400	6860	4420	3330	6080	4680	7990	4430	4420
25	3130	4180	5990	5130	7110	4700	5030	7450	3450	8440	3360	3670
26	4620	4080	6090	4820	5810	4300	4300	7510	3290	7690	3240	4010
27	5050	2250	7280	5300	6070	4910	4140	7640	4210	6810	2190	3850
28	5660	2980	6600	6950	6750	9050	4060	5840	4180	4970	1790	3950
29	5000	3460	6640	6680	---	8550	4540	7080	4720	4760	3210	3510
30	4110	3610	6220	6310	---	8400	3200	6870	4790	4660	3610	3220
31	4100	---	6090	5640	---	8210	---	6800	---	4720	3870	---
TOTAL	106570	110420	175040	183400	192720	198460	152810	159040	134450	229510	142900	129150
MEAN	3438	3681	5646	5916	6883	6402	5094	5130	4482	7404	4610	4305
MAX	5660	7010	10800	10400	8120	9050	8150	7640	5850	18600	8170	6060
MIN	1980	2150	3700	2950	5810	4300	3200	3530	3290	2910	1790	3220
AC-FT	211400	219000	347200	363800	382300	393600	303100	315500	266700	455200	283400	256200

CAL YR 1982 TOTAL 2024800 MEAN 5547 MAX 19600 MIN 1790 AC-FT 4016000
WTR YR 1983 TOTAL 1914470 MEAN 5245 MAX 18600 MIN 1790 AC-FT 3797000

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: January 1953 to September 1973, September 1974 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 3-5, 9, 12, 13, 20, 1977; minimum, 1.0°C Jan. 26, 27, 29-31, Feb. 1-3, 1972, Feb. 11, 1981, Feb. 7, 8, 20, 22-24, 1982.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 13.0°C Oct. 3; minimum recorded, 4.5°C Jan. 7-25.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.0	10.5				---	---	---	5.0	5.0	5.0
2	11.0	10.5	11.0				---	---	---	5.0	5.0	5.0
3	13.0	11.0	11.5				---	---	---	5.0	5.0	5.0
4	12.5	10.5	11.5				---	---	---	5.0	5.0	5.0
5	12.0	10.5	11.5				---	---	---	5.0	5.0	5.0
6	12.0	11.5	11.5				---	---	---	5.0	5.0	5.0
7	11.5	10.5	11.0				---	---	---	5.0	4.5	5.0
8	11.5	10.5	11.0				---	---	---	4.5	4.5	4.5
9	12.0	10.5	11.0				---	---	---	4.5	4.5	4.5
10	12.0	10.5	11.0				---	---	---	4.5	4.5	4.5
11	11.5	10.5	11.0				---	---	---	4.5	4.5	4.5
12	11.5	10.5	11.0				---	---	---	4.5	4.5	4.5
13	11.0	10.5	10.5				---	---	---	4.5	4.5	4.5
14	12.0	10.5	11.0				6.5	6.5	6.5	4.5	4.5	4.5
15	12.0	11.0	11.5				6.5	6.5	6.5	4.5	4.5	4.5
16	12.0	11.0	11.5				6.5	6.5	6.5	4.5	4.5	4.5
17	12.5	11.0	11.5				6.5	6.0	6.0	4.5	4.5	4.5
18	11.5	10.0	11.0				6.0	5.5	6.0	4.5	4.5	4.5
19	10.5	9.5	10.0				6.0	6.0	6.0	4.5	4.5	4.5
20	10.5	9.0	10.0				6.0	6.0	6.0	4.5	4.5	4.5
21	11.5	10.0	11.0				6.0	6.0	6.0	4.5	4.5	4.5
22	11.5	10.5	11.5				6.0	6.0	6.0	4.5	4.5	4.5
23	11.5	10.5	11.0				6.0	6.0	6.0	4.5	4.5	4.5
24	10.5	10.0	10.5				6.0	6.0	6.0	4.5	4.5	4.5
25	10.5	9.5	10.0				6.0	6.0	6.0	4.5	4.5	4.5
26	---	---	---				6.0	6.0	6.0	---	---	---
27	---	---	---				6.0	5.5	5.5	---	---	---
28	---	---	---				5.5	5.5	5.5	---	---	---
29	---	---	---				5.5	5.5	5.5	---	---	---
30	---	---	---				5.5	5.0	5.5	---	---	---
31	---	---	---				5.0	5.0	5.0	---	---	---
MONTH	---	---	---				---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1							---	---	---	8.0	6.5	7.0
2							---	---	---	7.5	7.0	7.0
3							---	---	---	7.5	6.5	7.0
4							---	---	---	8.5	6.5	7.5
5							---	---	---	7.5	7.0	7.0
6							---	---	---	8.0	7.0	7.0
7							---	---	---	8.0	7.0	7.0
8							---	---	---	7.5	7.0	7.0
9							---	---	---	7.5	7.0	7.0
10							---	---	---	8.5	6.5	7.5
11							---	---	---	8.5	7.0	7.5
12							---	---	---	8.5	7.5	8.0
13							6.5	5.0	5.5	8.5	7.5	8.0
14							6.5	5.5	6.0	8.0	7.0	7.5
15							6.5	6.0	6.0	8.0	7.0	7.5
16							7.0	6.0	6.5	8.0	7.5	7.5
17							7.5	6.0	6.5	8.0	7.5	7.5
18							7.5	6.0	6.5	8.5	7.5	7.5
19							8.0	6.5	7.0	9.5	7.0	8.0
20							7.0	6.5	6.5	10.0	7.5	8.5
21							7.5	6.0	6.5	10.0	7.5	8.5
22							7.0	6.0	6.5	10.5	7.0	8.5
23							8.0	6.5	7.0	9.5	7.0	8.0
24							7.0	5.0	6.5	9.5	7.5	8.5
25							6.5	6.0	6.5	9.5	7.5	8.5
26							7.5	6.0	6.5	9.5	8.0	8.5
27							8.0	6.0	7.0	9.5	8.0	8.5
28							8.0	6.5	7.0	10.0	8.0	9.0
29							8.0	6.5	7.0	10.5	8.0	9.0
30							8.0	6.5	7.0	10.0	7.5	8.5
31							---	---	---	8.5	8.0	8.5
MONTH							---	---	---	10.5	6.5	8.0

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	8.0	8.5	9.5	8.5	9.0	11.0	10.0	10.0	11.0	10.5	10.5
2	8.5	8.0	8.5	9.0	8.5	9.0	11.0	10.0	10.0	10.5	10.0	10.5
3	9.0	8.0	8.5	9.5	8.5	9.0	11.0	10.0	10.5	11.0	10.0	10.5
4	9.0	8.0	8.5	11.0	8.0	9.5	11.0	10.0	10.5	10.5	10.5	10.5
5	9.5	8.0	8.5	10.5	8.5	9.5	11.0	10.0	10.5	11.0	10.0	10.5
6	10.5	8.0	9.0	9.5	9.0	9.0	11.5	10.0	10.5	10.5	9.5	10.0
7	11.0	8.0	9.5	9.5	8.5	9.0	11.5	10.0	10.5	11.0	9.5	10.0
8	10.5	8.5	9.5	9.0	9.0	9.0	11.0	10.0	10.5	10.5	9.0	10.0
9	9.0	8.5	9.0	9.5	8.5	9.0	11.5	10.5	11.0	10.5	9.5	10.0
10	8.5	8.0	8.0	9.5	8.5	9.0	10.5	10.5	10.5	10.0	9.5	10.0
11	9.0	7.5	8.5	9.0	9.0	9.0	10.5	10.5	10.5	10.5	9.5	10.0
12	10.0	8.0	8.5	9.0	9.0	9.0	11.5	10.5	10.5	11.0	9.5	10.0
13	10.0	8.0	9.0	9.5	9.0	9.0	11.5	10.5	10.5	11.0	9.5	10.0
14	10.5	8.5	9.0	9.0	8.5	8.5	11.5	10.0	10.5	11.0	10.0	10.5
15	9.0	8.5	8.5	9.0	8.5	8.5	11.5	10.0	10.5	11.0	9.5	10.0
16	9.5	8.0	9.0	9.5	8.5	9.0	11.5	9.5	10.5	10.5	10.0	10.0
17	9.0	8.0	8.5	10.0	9.0	9.0	11.5	9.5	10.5	10.5	9.5	10.0
18	9.0	8.0	8.5	10.0	9.0	9.5	11.5	10.0	10.5	10.0	9.5	9.5
19	9.5	8.0	8.5	9.5	9.0	9.0	12.0	10.0	11.0	10.5	9.0	9.5
20	9.5	8.0	8.5	9.5	9.0	9.0	12.0	10.0	10.5	10.5	9.5	10.0
21	10.0	8.0	9.0	10.0	9.0	9.5	12.5	10.0	11.0	11.0	9.5	10.0
22	9.5	8.5	9.0	10.5	9.0	9.5	12.0	10.0	11.0	11.0	10.0	10.5
23	9.0	8.5	8.5	10.5	9.5	10.0	11.5	10.0	11.0	11.0	10.0	10.0
24	9.5	8.5	9.0	10.0	9.5	9.5	11.5	10.5	11.0	11.0	10.0	10.0
25	10.5	8.5	9.0	9.5	9.0	9.5	12.0	10.5	11.0	11.0	10.0	10.0
26	10.5	8.5	9.0	9.5	9.0	9.5	12.0	10.0	11.0	10.5	9.5	10.0
27	10.5	8.5	9.5	9.5	9.0	9.5	11.5	10.5	11.0	10.5	9.5	10.0
28	10.5	8.5	9.5	10.5	9.0	9.5	11.0	10.5	10.5	10.5	9.0	9.5
29	9.5	9.0	9.0	10.5	9.0	9.5	11.0	10.5	10.5	10.5	9.0	9.5
30	10.0	8.5	9.0	11.0	9.5	10.0	11.0	10.5	10.5	10.5	9.0	9.5
31	---	---	---	11.0	9.5	10.0	11.5	10.5	11.0	---	---	---
MONTH	11.0	7.5	9.0	11.0	8.0	9.0	12.5	9.5	10.5	11.0	9.0	10.0

12179800 SKAGIT RIVER ABOVE BACON CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'10", long 121°23'11", in SE¼SW¼ sec.21, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.1 mi upstream from Bacon Creek, 5.9 mi northeast of Marblemount, and at mile 83.0.

DRAINAGE AREA.--1,289 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--April 1977 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 350 ft, from topographic map.

REMARKS.--Records good. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River by Ross (see sta 12175000), Diablo (see sta 12176500), and Gorge (see sta 12177700) Reservoirs.

AVERAGE DISCHARGE.--6 years (water years 1978-83), 5,112 ft³/s, 3,704,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,600 ft³/s Dec. 26, 1980, gage height, 14.33 ft; minimum, 1,080 ft³/s Oct. 7, 8, 1979, gage height, 1.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,000 ft³/s July 13, gage height, 12.53 ft; minimum, 1,490 ft³/s Oct. 6, gage height, 2.01 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2560	5140	3840	6000	7350	7510	8350	3810	6670	4880	5870	5060
2	2220	3520	4680	4920	7510	7330	6590	5010	6300	4810	5940	6490
3	2010	3050	12900	4900	6630	7070	5760	4790	5330	3330	6690	5130
4	3470	3310	9120	4810	6390	6970	4150	4110	4400	3750	6610	4430
5	2610	3410	5030	5940	7190	6490	4130	4940	3860	3920	6140	4180
6	3480	2910	5190	5120	7410	5760	4320	5120	4540	4590	5130	3950
7	4340	2650	4940	5530	7410	6430	5420	4470	5120	4740	4420	3300
8	3500	3320	5190	11500	7350	6970	5670	4860	5940	5220	5850	3990
9	2670	3650	4590	7810	7370	8610	6160	4650	5960	5480	5440	5030
10	2120	3540	4610	10200	7150	8230	7170	4370	6890	3890	4970	5310
11	3810	3720	5240	9010	6910	7890	6320	5640	4990	7990	6910	4630
12	3630	4100	5390	7490	7010	7010	6250	6450	4430	14500	8230	4610
13	3290	2350	5510	7050	7170	6380	5820	5060	4500	18500	6850	5350
14	3080	2240	5840	7010	7970	7430	6050	4720	4670	19600	6030	5480
15	2740	3460	6490	6450	6870	7410	6890	5330	5890	16200	5210	4320
16	2210	3490	7090	5780	7390	6490	5870	5300	5170	11000	4100	4110
17	2730	3320	5780	5620	8130	6180	4370	4940	6690	8510	4230	4110
18	4210	3530	4540	5440	8670	5850	4290	4320	6070	9930	4420	3720
19	3970	3800	5440	6090	7530	4700	4700	3940	4340	8530	3000	4130
20	3940	3440	6070	7120	6490	4880	5440	3920	4240	8730	3510	4310
21	3440	5550	5460	5760	6770	5870	5570	4310	4070	7590	2660	3970
22	5750	6540	5440	4240	7130	5800	4880	4420	4420	7570	2820	4160
23	2990	6850	5460	3070	7110	5960	4110	5910	4560	7770	4030	4240
24	2280	5630	5840	4500	7530	4560	3740	6890	5120	8150	4430	4390
25	3360	4270	6120	5280	7650	4830	5310	8270	3810	8510	3380	3650
26	4760	4180	6210	5040	6230	4400	4580	8310	3650	7790	3240	3950
27	5370	2420	7430	5620	6360	4970	4310	8470	4610	6970	2180	3830
28	5910	3170	6730	7230	7030	8940	4230	6970	4630	5240	1780	3910
29	5180	3660	6730	6930	---	8750	4760	8430	5190	4920	3180	3510
30	4280	3730	6320	6510	---	8690	3470	8210	5280	4810	3560	3170
31	4240	---	6180	5840	---	8470	---	7830	---	4920	3920	---
TOTAL	110150	114050	185400	193820	201710	206830	158680	173770	151340	242340	144730	130420
MEAN	3553	3802	5981	6252	7204	6672	5289	5605	5045	7817	4669	4347
MAX	5910	6850	12900	11500	8670	8940	8350	8470	6890	19600	8230	6490
MIN	2010	2240	3840	3070	6230	4400	3470	3810	3650	3330	1780	3170
AC-FT	218500	226200	367700	384400	400100	410200	314700	344700	300200	480700	287100	258700

CAL YR 1982 TOTAL 2072330 MEAN 5678 MAX 18800 MIN 1860 AC-FT 4110000
WTR YR 1983 TOTAL 2013240 MEAN 5516 MAX 19600 MIN 1780 AC-FT 3993000

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE¼SW¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi north of Marblemount, 0.6 mi upstream from Cascade River, and at mile 78.7.

DRAINAGE AREA.--1,381 mi², which 400 mi² is in Canada.

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Records good. All diversions returned to river above gage. Flow regulated by Ross Reservoir (see sta 12175000), Diablo Reservoir (see sta 12176500), and Gorge Reservoir (see sta 12177700) since 1960.

AVERAGE DISCHARGE.--12 years (water years 1947-51, 1977-83), 6,120 ft³/s, 4,435,000 acre-ft/yr, unadjusted for regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,300 ft³/s Nov. 27, 1949, gage height, 11.37 ft, from rating curve extended above 20,000 ft³/s; minimum, 620 ft³/s Mar. 6, 1944, gage height, 0.55 ft; minimum daily, 1,190 ft³/s Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,800 ft³/s July 13, gage height, 6.97 ft; minimum, 2,130 ft³/s Oct. 6, Sept. 30, gage height, 2.09 ft; minimum daily, 2,440 ft³/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3190	6150	4640	6750	8130	8490	9120	4550	7410	5600	6820	5610
2	2950	4580	5490	5700	8330	8300	7310	5550	7000	5710	6800	7320
3	2710	3880	10200	5670	7480	8000	6400	5440	6070	4220	7510	5710
4	4130	4240	11700	5590	7140	7880	4840	4800	5180	4350	7190	5030
5	3260	4400	6360	7180	7900	7400	4790	5610	4660	4660	6950	4720
6	4150	3930	6230	6210	8200	6700	4970	5820	5260	5240	5880	4400
7	5340	3590	5940	6940	8190	7350	5910	5180	5980	5200	5210	3860
8	4360	4090	6110	14500	8110	8040	6400	5480	6890	5570	6570	4300
9	3500	4470	5510	9430	8140	8440	6600	5250	6850	5970	6230	5380
10	3030	4360	5480	12800	7910	9480	7750	4920	8180	4500	5740	5870
11	4530	4440	6070	11100	7860	8340	6910	6150	5940	8450	7790	5390
12	4460	4880	6190	9030	8220	7760	6750	7000	5280	14400	9300	5080
13	4010	3120	6350	8350	8380	7200	6350	5750	5310	19300	7630	5750
14	3820	2920	6670	8210	9110	8090	6520	5430	5460	22300	6840	5940
15	3390	4040	7370	7590	7880	8130	7430	5990	6800	19900	5910	4800
16	2910	4240	8550	6830	8410	7230	6570	5900	6040	13700	4690	4600
17	3540	4110	6920	6610	9380	6900	4940	5540	7800	10000	4820	4610
18	4930	4440	5640	6450	10100	6490	5030	5070	7180	11700	5040	4220
19	4750	4570	6400	7010	8660	5350	5470	4680	5410	9960	3710	4590
20	4720	4190	7060	8140	7640	5480	6230	4810	5140	10200	4060	4730
21	4090	6300	6390	6670	7810	6430	6380	5260	4900	8850	3320	4430
22	7400	7690	6380	5120	8220	6410	5660	5410	5190	8790	3380	4610
23	4210	7660	6260	4040	8580	6580	4970	6890	5420	9000	4520	4680
24	3300	6520	6710	5250	9020	5170	4690	7890	5910	9390	5040	4820
25	4120	5070	6890	6130	8930	5400	6060	9330	4730	9760	3970	4130
26	5850	4920	6980	6040	7350	4960	5370	9260	4550	8940	3820	4370
27	6720	3340	8280	6630	7380	5460	4910	9480	5310	8010	2780	4280
28	4430	4100	7560	8170	8030	9520	4840	8080	5300	6290	2440	4370
29	7370	4620	7500	7880	---	9720	5390	9710	5790	5920	3710	4000
30	5210	4560	7140	7310	---	9600	4300	9350	5880	5700	4070	3610
31	5130	---	6950	6670	---	9280	---	8760	---	5840	4530	---
TOTAL	135510	139420	211920	230000	230490	229580	178860	198440	176820	277420	166270	145210
MEAN	4371	4647	6836	7419	8232	7406	5962	6401	5894	8949	5364	4840
MAX	7400	7690	11700	14500	10100	9720	9120	9710	8180	22300	9300	7320
MIN	2710	2920	4640	4040	7140	4960	4300	4550	4550	4220	2440	3610
AC-FT	268800	276500	420300	456200	457200	455400	354800	393600	350700	550300	329800	288000

CAL YR 1982 TOTAL 2529400 MEAN 6930 MAX 23600 MIN 2570 AC-FT 5017000
WTR YR 1983 TOTAL 2319940 MEAN 6356 MAX 22300 MIN 2440 AC-FT 4602000

12181100 SOUTH FORK CASCADE RIVER AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'13", long 121°04'23", Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank at outlet of South Cascade Lake, 10.2 mi upstream from confluence with North fork, 21 mi southeast of Marblemount, and at mile 28.9.

DRAINAGE AREA.--2.36 mi².

PERIOD OF RECORD.--July 1957 to September 1961 (seasonal records only; published as "near Marblemount"), October 1961 to September 1981, intermittent in 1982, October 1982 to September 1983. Prior to October 1960, monthly discharge only published in WSP 1736; records of daily discharge available in files of Washington office.

GAGE.--Water-stage recorder. Datum of gage is 5,290.61 ft National Geodetic Vertical Datum of 1929 (from U.S. Coast and Geodetic Survey triangulation point). Prior to Sept. 23, 1960, at datum 0.47 ft lower. Sept. 23, 1960, to Aug. 10, 1964, at datum 1.34 ft lower.

REMARKS.--Records fair. No regulation or diversion above station. Flow originates at South Cascade Glacier.

AVERAGE DISCHARGE.--21 years (water years 1962-81, 1983), 26.5 ft³/s, 152.49 in/yr, 19,199 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 235 ft³/s Dec. 26, 1980, gage height, 3.80 ft; minimum recorded, 0.6 ft³/s probably sometime Mar. 21-31, 1964, gage height, 0.16 ft, from recorded range in stage.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 218 ft³/s Aug. 13; minimum daily discharge, 2.0 ft³/s Jan. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.6	3.5	3.9	2.1	3.5	3.3	9.5	107	56	107	110
2	19	8.4	3.5	3.9	2.1	3.5	3.3	10	80	58	90	123
3	17	7.3	25	3.9	2.1	3.4	3.3	9.1	62	46	72	73
4	14	7.8	34	3.9	2.1	3.3	3.3	8.0	50	39	68	60
5	13	9.4	17	5.6	2.1	3.3	3.3	8.6	42	47	67	50
6	12	10	11	5.7	2.1	3.2	3.1	9.0	39	51	70	39
7	13	8.5	9.1	6.0	2.1	3.2	3.1	7.8	51	39	73	33
8	12	7.4	6.9	10	2.1	3.2	3.0	6.8	67	31	95	24
9	11	6.4	5.9	11	2.1	3.3	3.0	6.1	69	28	107	19
10	15	6.1	4.9	12	2.1	4.8	3.0	5.4	63	26	131	39
11	18	5.7	4.6	8.4	2.1	5.0	3.0	5.2	47	62	127	77
12	17	5.4	4.5	6.0	2.1	4.5	3.0	6.6	36	184	96	46
13	17	5.2	4.7	4.7	2.3	4.1	3.0	9.5	31	218	84	40
14	23	4.9	4.5	4.0	2.4	4.1	3.0	12	39	174	88	43
15	26	4.7	4.6	3.4	2.4	4.1	3.0	12	63	90	79	36
16	25	5.1	5.6	3.0	2.4	3.4	2.9	10	56	52	60	33
17	24	6.0	5.3	2.8	2.5	3.3	2.9	9.8	81	43	55	25
18	17	5.8	4.7	2.3	2.6	3.3	2.7	9.9	73	45	59	19
19	14	5.6	4.3	2.3	2.5	3.3	3.7	9.3	48	54	62	15
20	12	5.9	4.2	2.2	2.5	3.3	5.4	13	35	60	59	13
21	13	5.3	4.0	2.1	2.5	3.3	6.8	25	29	65	53	16
22	48	4.7	3.9	2.0	2.5	3.3	7.1	32	28	66	55	26
23	41	4.2	3.9	2.1	2.5	3.3	7.4	35	34	79	57	26
24	27	4.0	3.9	2.1	3.1	3.3	9.7	38	32	87	58	24
25	20	3.9	3.9	2.2	3.5	3.3	9.9	47	29	75	54	23
26	19	3.9	3.9	2.4	3.6	3.3	8.2	50	34	58	48	27
27	16	3.9	3.9	2.6	3.5	3.3	6.8	51	41	47	45	31
28	13	3.9	3.9	2.5	3.5	3.3	6.7	75	53	54	49	20
29	11	3.9	3.9	2.3	---	3.3	7.2	114	56	55	55	15
30	10	3.7	3.9	2.1	---	3.3	8.3	123	55	64	82	12
31	9.7	---	3.9	2.1	---	3.3	---	128	---	94	81	---
TOTAL	558.7	176.6	210.8	129.5	69.5	109.4	142.4	895.6	1530	2147	2286	1137
MEAN	18.0	5.89	6.80	4.18	2.48	3.53	4.75	28.9	51.0	69.3	73.7	37.9
MAX	48	10	34	12	3.6	5.0	9.9	128	107	218	131	123
MIN	9.7	3.7	3.5	2.0	2.1	3.2	2.7	5.2	28	26	45	12
CFSM	7.63	2.50	2.88	1.77	1.05	1.50	2.01	12.2	21.6	29.4	31.2	16.1
IN.	8.81	2.78	3.32	2.04	1.10	1.72	2.24	14.12	24.12	33.84	36.03	17.92
AC-FT	1110	350	418	257	138	217	282	1780	3030	4260	4530	2260

WTR YR 1983 TOTAL 9392.5 MEAN 25.7 MAX 218 MIN 2.0 CFSM 10.9 IN. 148.05 AC-FT 18630

12181200 SALIX CREEK AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'16", long 121°04'35", in SE¼ sec.2, T.33 N., R.13 E.(unsurveyed), Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank 900 ft west of South Cascade Lake, 0.5 mi upstream from mouth, and 21 mi southeast of Marblemount.

DRAINAGE AREA.--0.078 mi^2.

PERIOD OF RECORD.--June to November 1961, May 1962 to January 1964 (fragmentary), May 1964 to November 1965, March 1966 to October 1973, July 1974 to October 1975, May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,200 ft, from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--16 years (water years 1965, 1967-73, 1975, 1977-83), 0.59 ft^3/s, 102.72 in/yr, 427 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 29 ft^3/s Feb. 3, 1963, gage height, 3.43 ft, from rating curve extended above 9 ft^3/s; minimum, 0.02 ft^3/s Aug. 24-29, 1961, Aug. 29, 30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6.6 ft^3/s May 29; minimum, 0.04 ft^3/s part or all of each day Jan. 31 to Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.26	.08	.08	.04	.10	.06	1.1	2.5	1.4	.22	1.2
2	.59	.22	3.1	.08	.04	.09	.06	.93	2.7	.96	.21	.98
3	.37	.25	2.5	.07	.04	.08	.06	.63	2.0	.98	.20	.33
4	.22	.31	.55	.07	.04	.08	.06	.74	1.6	.82	.19	.33
5	.17	.28	.33	.07	.04	.07	.06	.88	1.6	.65	.17	.25
6	.23	.24	.24	.07	.04	.07	.07	.57	1.5	.56	.16	.23
7	.32	.22	.20	.11	.04	.07	.10	.45	2.2	.69	.16	.33
8	.35	.20	.18	.87	.04	.06	.10	.38	2.6	.60	.15	.23
9	.62	.18	.15	.33	.04	.71	.09	.35	2.6	.55	.44	.30
10	1.3	.17	.17	.20	.04	.59	.08	.59	2.9	2.6	.92	1.5
11	.65	.16	.17	.14	.12	.31	.08	1.1	2.0	2.9	.40	1.1
12	.38	.14	.15	.12	.30	.21	.07	1.4	1.6	3.3	.24	.42
13	.29	.13	.14	.10	.17	.16	.07	1.2	1.5	2.3	.19	.26
14	.24	.12	.13	.10	.10	.13	.07	.69	1.7	1.5	.17	.23
15	.23	.12	.13	.09	.08	.11	.08	.61	1.9	1.0	.15	.17
16	.45	.12	.13	.09	.07	.10	.14	.86	1.6	.81	.13	.20
17	.50	.11	.12	.09	.07	.09	.26	.67	2.6	.71	.17	.28
18	.43	.11	.12	.09	.07	.09	.47	1.8	2.0	.58	.16	.32
19	.39	.11	.12	.08	.06	.08	.73	2.4	1.5	.61	.14	.26
20	.36	.10	.11	.08	.06	.08	.87	2.2	1.3	.50	.13	.20
21	1.0	.10	.11	.07	.05	.08	.96	2.3	1.1	.47	.12	.17
22	2.0	.10	.10	.07	.08	.08	.78	2.4	1.2	.43	.11	.14
23	.67	.09	.10	.07	.40	.08	1.1	2.2	1.7	.39	.11	.13
24	.52	.09	.09	.07	.49	.08	1.4	2.5	1.3	.38	.11	.12
25	.44	.09	.09	.07	.27	.08	.72	2.7	1.3	.34	.10	.10
26	.48	.10	.09	.07	.18	.08	.46	2.7	1.3	.38	.09	.13
27	.52	.09	.09	.07	.13	.08	.39	2.7	1.4	.33	.09	.13
28	.40	.09	.09	.06	.11	.07	.61	4.3	1.3	.27	.12	.09
29	.36	.08	.09	.05	---	.07	.95	6.6	1.3	.25	.11	.08
30	.32	.08	.08	.05	---	.07	1.0	4.8	1.3	.24	.28	.07
31	.29	---	.08	.04	---	.07	---	3.6	---	.23	.12	---
TOTAL	15.24	4.46	9.84	3.62	3.21	4.12	11.95	56.35	53.1	27.73	6.06	10.28
MEAN	.49	.15	.32	.12	.11	.13	.40	1.82	1.77	.89	.20	.34
MAX	2.0	.31	3.1	.87	.49	.71	1.4	6.6	2.9	3.3	.92	1.5
MIN	.15	.08	.08	.04	.04	.06	.06	.35	1.1	.23	.09	.07
CFSM	6.12	1.87	4.00	1.50	1.37	1.62	5.00	22.7	22.1	11.1	2.50	4.25
IN.	7.09	2.07	4.58	1.68	1.49	1.92	5.56	26.20	24.69	12.89	2.82	4.78
AC-FT	30	8.8	20	7.2	6.4	8.2	24	112	105	55	12	20

CAL YR 1982 TOTAL 229.88 MEAN .63 MAX 4.5 MIN .03 CFSM 7.87 IN. 106.89 AC-FT 456
WTR YR 1983 TOTAL 205.96 MEAN .56 MAX 6.6 MIN .04 CFSM 7.00 IN. 95.77 AC-FT 409

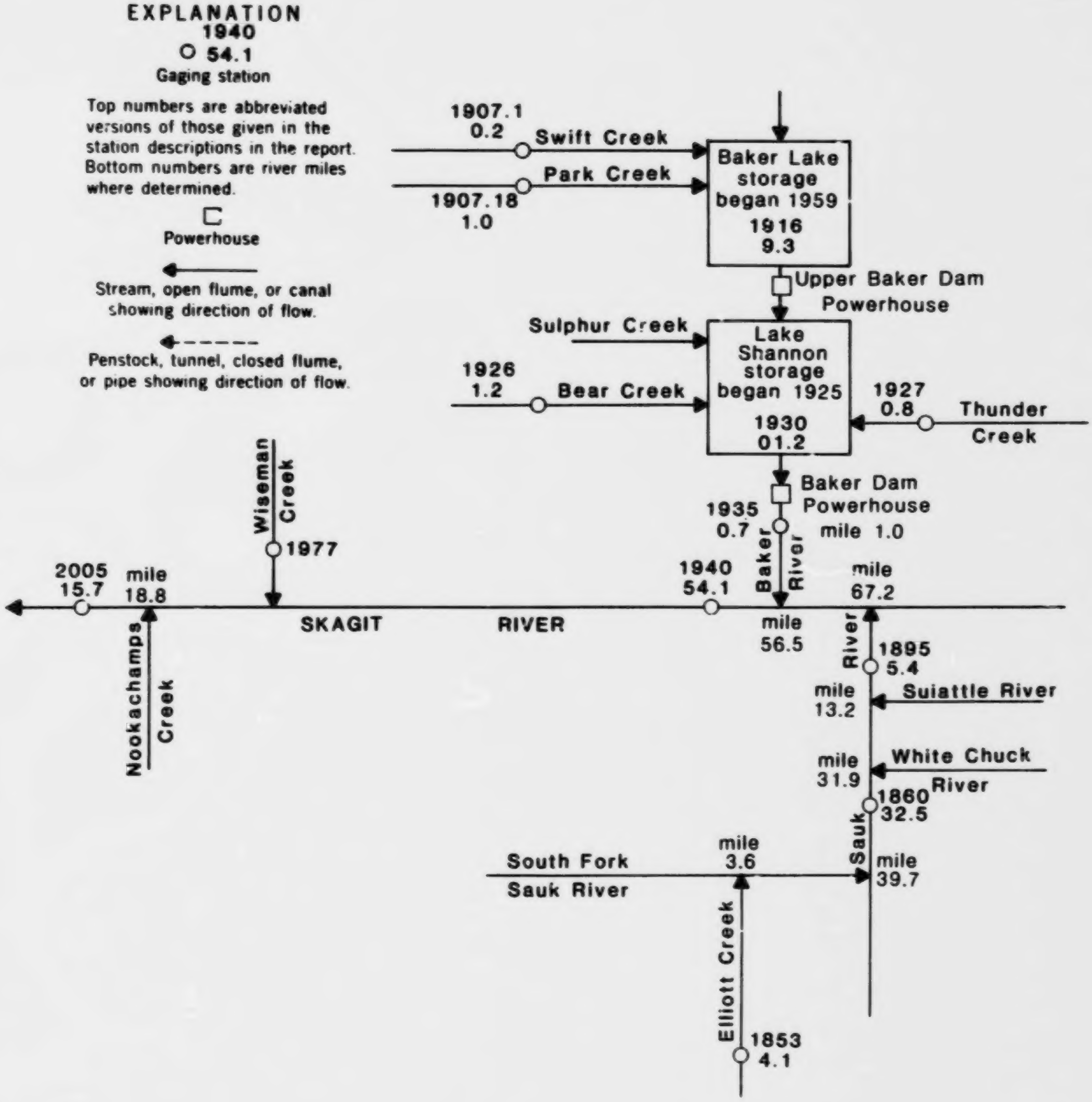
EXPLANATION
1940
54.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
1907.1
0.2
Swift Creek
Park Creek
1907.18
1.0
Baker Lake storage began 1959
1916
9.3
Upper Baker Dam Powerhouse
Sulphur Creek
1926
1.2
Bear Creek
Lake Shannon storage began 1925
1930
01.2
1927
0.8
Thunder Creek
Baker Dam Powerhouse
1935
0.7
mile 1.0
Baker River
Wiseman Creek
1977
2005
15.7
mile
18.8
SKAGIT
RIVER
1940
54.1
mile
56.5
mile
67.2
Nookachamps Creek
1895
5.4
mile
13.2
Suiattle River
mile
31.9
White Chuck River
1860
32.5
Sauk River
South Fork Sauk River
mile
3.6
mile
39.7
Elliott Creek
1853
4.1

Figure 17.—Gaging stations in Skagit River basin below Cascade River.

12184200 UPPER ILLABOT CREEK NEAR ROCKPORT, WA

LOCATION.--Lat 48°25'54", long 121°25'42", in NW¼SE¼ sec.18, T.34 N., R.11 E. (unsurveyed), Skagit County, Hydrologic Unit 17110005, on left bank, 0.3 mi downstream from Bluebell Creek, 8.3 mi southeast of Rockport, and at mile 7.1.

DRAINAGE AREA.--27.0 mi^2.

PERIOD OF RECORD.--September 1982 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,555 ft, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,600 ft^3/s Dec. 3, 1982, gage height, 12.18 ft; minimum daily discharge, 81 ft^3/s Sept. 30, 1983.

EXTREMES FOR CURRENT PERIOD.--

SEPTEMBER 1982.--Maximum discharge, 350 ft^3/s Sept. 9, gage height, 8.66 ft; minimum, 93 ft^3/s Sept. 30, gage height, 7.88 ft.

OCTOBER TO SEPTEMBER 1983.--Maximum discharge, 2,600 ft^3/s Dec. 3, gage height, 12.18 ft; minimum daily discharge, 81 ft^3/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR SEPTEMBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	88	184	147	90	121	162	133	168	499	362	266	210
2	141	100	168	135	90	116	159	130	168	450	411	251	299
3	184	105	159	1570	90	108	153	124	168	407	370	230	206
4	241	98	165	819	98	103	150	119	168	366	318	220	184
5	193	90	227	428	354	100	147	116	171	338	314	217	165
6	171	98	237	322	206	98	144	113	187	310	303	210	153
7	165	159	197	255	288	95	141	111	190	338	266	206	144
8	162	133	174	220	622	90	197	111	187	424	241	210	133
9	234	127	162	197	322	88	433	105	177	424	234	213	130
10	203	130	153	177	532	88	420	100	168	486	223	220	174
11	206	138	141	162	370	138	334	98	165	437	318	244	269
12	288	133	133	156	280	187	266	93	165	382	919	237	203
13	213	124	124	153	241	230	237	88	165	342	1060	213	181
14	153	121	116	141	203	190	220	85	181	334	880	206	168
15	138	111	113	138	184	168	193	83	184	411	744	197	156
16	130	119	111	258	168	168	174	83	177	403	550	181	147
17	122	144	147	213	168	248	165	83	171	518	455	168	138
18	116	124	153	184	162	276	153	93	171	486	416	165	135
19	113	113	147	174	162	200	147	116	171	428	395	159	122
20	113	108	141	159	159	174	141	133	193	399	446	156	105
21	113	111	127	147	150	165	135	147	280	346	395	150	98
22	108	342	116	138	141	159	133	150	310	314	362	150	95
23	105	280	111	130	135	217	133	147	374	322	354	147	92
24	105	241	111	121	133	266	124	165	433	318	342	144	90
25	108	210	105	119	133	258	119	168	459	306	310	141	88
26	108	266	103	113	135	217	116	159	446	303	280	135	91
27	98	295	113	108	165	187	113	156	463	303	262	133	94
28	98	251	184	105	165	168	108	159	564	335	269	135	88
29	98	220	177	100	150	---	121	159	724	342	258	141	84
30	95	193	159	98	138	---	141	162	729	378	251	156	81
31	---	177	---	95	127	---	141	---	627	---	255	141	---
TOTAL	4459	4949	4458	7282	6361	4623	5520	3689	8904	11449	12563	5742	4323
MEAN	149	160	149	235	205	165	178	123	287	382	405	185	144
MAX	288	342	237	1570	622	276	433	168	729	518	1060	266	299
MIN	95	88	103	95	90	88	108	83	165	303	223	133	81
AC-FT	8840	9820	8840	14440	12620	9170	10950	7320	17660	22710	24920	11390	8570

WTR YR 1983 TOTAL 79863 MEAN 219 MAX 1570 MIN 81 AC-FT 158400

12184500 ILLABOT CREEK NEAR ROCKPORT, WA

LOCATION.--Lat 48°28'53", long 121°30'03", in NW¼NW¼ sec.34, T.35 N., R.10 E., Skagit County, Hydrologic Unit 17110005, on right bank at Rockport-Cascade county highway bridge, 4.5 mi east of Rockport, and 0.6 mi upstream from mouth.

DRAINAGE AREA.--42.4 mi².

PERIOD OF RECORD.--August to October 1943, July to November 1944, March 1982 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 320 ft, from topographic map. Aug. 23 to Oct. 31, 1943, at different datum, and July 1 to Nov. 3, 1944, at site 0.5 mi upstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,890 ft³/s Dec. 3, 1982, gage height, 6.66 ft; minimum observed, 58 ft³/s Sept. 8, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,890 ft³/s Dec. 3, gage height, 6.66 ft; minimum, 94 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	232	190	134	182	253	204	225	600	380	276	207
2	115	192	177	138	172	246	201	225	520	512	256	310
3	117	179	1620	144	164	232	185	222	450	438	239	216
4	106	210	1240	169	157	219	172	222	400	368	222	185
5	100	292	688	815	151	213	167	228	340	362	219	167
6	112	335	480	398	148	213	164	253	315	345	213	153
7	201	256	362	480	151	213	164	249	355	296	210	144
8	151	219	305	1130	140	345	155	235	410	276	213	136
9	146	192	272	607	146	827	148	213	466	268	219	134
10	155	177	242	1160	146	677	144	195	579	249	225	182
11	162	164	219	721	280	512	140	190	512	350	264	300
12	148	155	225	488	374	398	130	200	424	1060	250	216
13	136	146	219	392	398	350	130	210	362	1180	214	190
14	132	140	204	315	305	335	126	240	356	1100	213	172
15	128	136	235	284	276	300	126	230	466	904	198	158
16	138	146	569	260	300	272	128	210	445	645	182	146
17	167	198	380	249	424	246	136	205	598	520	172	142
18	140	192	330	249	480	225	155	220	617	466	167	138
19	128	185	300	249	335	210	185	240	528	431	162	128
20	124	177	260	239	305	195	216	285	480	496	158	122
21	136	162	239	219	280	187	249	350	410	438	151	115
22	445	148	225	204	292	185	225	390	356	586	148	117
23	335	142	207	207	438	182	219	480	362	368	148	113
24	284	136	192	207	504	172	256	550	392	356	144	110
25	228	130	185	198	424	164	246	580	356	325	140	106
26	356	140	174	232	345	157	216	560	350	292	134	108
27	404	157	162	305	296	155	195	540	350	276	132	115
28	320	268	157	264	272	153	192	610	340	288	138	102
29	268	253	148	232	---	204	198	730	350	276	146	97
30	228	216	142	210	---	246	210	870	410	260	162	94
31	210	---	138	192	---	225	---	760	---	264	148	---
TOTAL	5918	5675	10486	11091	7885	8511	5382	10917	12900	14175	5863	4623
MEAN	191	189	338	358	282	275	179	352	430	457	189	154
MAX	445	335	1620	1160	504	827	256	870	617	1180	276	310
MIN	98	130	138	134	140	153	126	190	315	249	132	94
CFSM	4.50	4.46	7.97	8.44	6.65	6.49	4.22	8.30	10.1	10.8	4.46	3.63
IN.	5.19	4.98	9.20	9.73	6.92	7.47	4.72	9.58	11.32	12.44	5.14	4.06
AC-FT	11740	11260	20800	22000	15640	16880	10680	21650	25590	28120	11630	9170

WTR YR 1983 TOTAL 103426 MEAN 283 MAX 1620 MIN 94 CFSM 6.67 IN. 90.74 AC-FT 205100

12185295 GOAT LAKE INLET NEAR MONTE CRISTO, WA

LOCATION.--Lat 48°00'52", long 121°20'51", in NE¼ sec.11, T.29 N., R.11 E. (unsurveyed), at Goat Lake Inlet, Snohomish County, Hydrologic Unit 17110006, and 2.5 miles northeast of Monte Cristo.

PERIOD OF RECORD.--January to September 1983.

REMARKS.--Quality of water analyses for dissolved aluminum and dissolved iron were determined from water filtered through a 0.10 micrometer filter. Discharge measured intermittingly at same site.

WATER QUALITY DATA, WATER YEAR JANUARY TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM
JAN , 1983												
12...	0755	--	16	6.4	3.5	6	0	--	1.8	.40	.40	12
MAR												
07...	1105	5.8	18	6.1	3.5	7	0	--	1.9	.44	.40	11
31...	1035	--	18	6.4	3.5	7	0	--	2.0	.51	.40	10
APR												
21...	0945	--	13	6.8	3.0	7	0	.6	2.0	.50	.40	10
MAY												
19...	1000	14	17	6.6	3.5	7	0	.1	1.9	.47	.40	11
JUN												
09...	1100	--	16	6.5	4.0	6	0	<.1	1.6	.47	.30	10
29...	0950	--	15	6.6	4.5	6	0	<.1	1.6	.39	.30	10
JUL												
19...	1030	38	14	6.4	5.0	5	0	<.1	1.5	.31	.50	17
AUG												
24...	1155	--	14	6.3	6.0	6	0	<.1	1.7	.42	.30	9

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	BROMIDE DIS-SOLVED (MG/L AS BR)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)
JAN , 1983												
12...	.0	.30	9.0	1.4	.52	.04	<.05	2.4	13	.02	--	.13
MAR												
07...	.0	.30	9.0	2.8	.36	.01	.05	2.7	15	.02	--	.03
31...	.0	.30	11	1.3	.37	.01	<.05	3.4	15	.02	--	.12
APR												
21...	.0	.31	9.0	1.3	.37	.03	<.05	2.3	13	.02	--	--
MAY												
19...	.0	.23	10	1.4	.31	.01	.03	2.3	13	.02	--	--
JUN												
09...	.0	.20	8.0	1.2	.21	<.01	<.05	1.9	11	.01	.019	--
29...	.0	.17	8.0	1.3	--	<.01	<.05	1.8	--	--	.055	--
JUL												
19...	.0	.15	8.0	1.3	.16	<.01	<.05	1.8	11	.01	.056	--
AUG												
24...	.0	.31	8.0	1.5	.13	<.01	<.05	2.1	11	.02	.033	--

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
JAN , 1983					
12...	<.100	<10	3	3	--
MAR					
07...	<.100	10	20	10	--
31...	<.100	<10	12	10	--
APR					
21...	<.100	<10	5	6	--
MAY					
19...	<.100	<10	18	3	--
JUN					
09...	<.100	<10	15	<1	.50
29...	<.100	20	5	2	.60
JUL					
19...	<.100	<10	12	2	.30
AUG					
24...	<.100	20	7	2	.50

12185300 ELLIOTT CREEK AT GOAT LAKE OUTLET, NEAR MONTE CRISTO, WA

LOCATION.--Lat 48°01'20", long 121°21'19", in SW¼SE¼ sec.2, T.29 N., R.11 E. (unsurveyed), at Goat Lake outlet, Snohomish County, Hydrologic Unit 17110006, on left bank 50 ft upstream from falls, and 3.0 mi northeast of Monte Cristo.

DRAINAGE AREA.--3.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 755 ft³/s Dec. 3, gage height, 2.35 ft; minimum daily, 5.2 ft³/s Feb. 8, gage height, 0.63 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	27	12	7.4	7.8	23	12	29	114	54	45	51
2	---	24	12	7.4	7.4	23	12	30	92	62	45	92
3	---	21	260	7.4	7.0	21	12	30	75	64	42	77
4	---	20	284	7.4	6.5	21	12	30	62	53	40	49
5	---	21	92	19	6.1	19	12	30	54	51	39	39
6	---	23	54	23	5.6	20	12	30	51	51	39	32
7	---	23	36	32	5.6	20	12	30	51	49	39	27
8	---	22	27	102	5.2	18	12	30	66	42	40	24
9	---	20	23	82	5.6	49	12	30	79	36	40	22
10	---	17	20	62	6.1	84	12	30	87	33	45	26
11	---	15	18	53	6.1	68	12	29	84	33	49	49
12	---	15	16	37	9.2	51	11	27	62	117	53	42
13	---	14	16	26	13	39	10	27	53	284	42	34
14	---	13	15	20	13	33	9.6	27	49	206	39	32
15	---	12	15	15	13	27	9.6	27	56	142	37	27
16	---	12	16	13	13	22	9.6	27	60	100	36	25
17	---	13	16	12	14	20	9.6	27	64	75	32	23
18	---	13	15	11	18	18	9.6	27	75	68	29	22
19	---	13	15	11	18	16	13	29	73	62	27	22
20	---	13	15	10	17	15	16	32	66	58	27	19
21	---	13	15	9.2	16	13	21	45	51	58	26	17
22	49	13	14	9.2	17	13	23	56	44	58	25	15
23	64	12	13	9.2	29	13	25	68	44	58	25	15
24	47	12	12	8.3	45	12	29	79	44	58	25	14
25	40	12	10	7.8	42	12	30	89	44	58	25	13
26	42	11	10	7.8	34	12	30	89	45	53	24	13
27	44	11	9.2	9.2	29	11	30	89	45	45	23	13
28	44	12	8.7	9.6	27	11	29	111	49	44	23	13
29	40	12	8.3	9.2	---	12	29	190	54	44	25	13
30	34	12	7.8	9.2	---	12	29	206	56	44	32	12
31	30	---	7.8	8.7	---	12	---	159	---	44	34	---
TOTAL	---	471	1092.8	654.0	436.2	740	505.0	1759	1849	2204	1072	872
MEAN	---	15.7	35.3	21.1	15.6	23.9	16.8	56.7	61.6	71.1	34.6	29.1
MAX	---	27	284	102	45	84	30	206	114	284	53	92
MIN	---	11	7.8	7.4	5.2	11	9.6	27	44	33	23	12
AC-FT	---	934	2170	1300	865	1470	1000	3490	3670	4370	2130	1730

12185300 ELLIOTT CREEK AT GOAT LAKE OUTLET, NEAR MONTE CRISTO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--January to September 1983.

REMARKS.--Quality of water analyses for dissolved aluminum and dissolved iron were determined from water filtered through a 0.10 micrometer filter.

WATER QUALITY DATA, WATER YEAR JANUARY TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM
JAN , 1983												
12...	0845	40	17	6.3	2.5	6	0	--	1.9	.40	.50	14
MAR												
07...	1145	20	16	6.3	3.0	7	0	--	1.9	.43	.60	16
31...	1040	--	21	6.2	4.0	9	0	--	2.5	.60	.60	12
APR												
21...	0955	27	17	7.0	8.0	8	0	1.0	2.3	.52	.70	15
JUN												
09...	0950	--	16	6.5	7.5	6	0	<.1	1.7	.41	.40	12
29...	1005	--	16	6.6	9.0	6	0	<.1	1.7	.36	.40	13
JUL												
19...	1125	60	14	6.4	9.0	5	0	<.1	1.5	.36	.50	17
AUG												
24...	1205	--	13	6.4	12.5	6	0	<.1	1.7	.42	.40	12

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	BROMIDE DIS-SOLVED (MG/L AS BR)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)
JAN , 1983												
12...	.0	.40	9.0	1.5	.63	.05	<.05	3.1	15	.02	--	.14
MAR												
07...	.1	.40	10	1.4	1.1	.13	<.05	3.3	16	.02	--	.11
31...	.0	.40	12	1.8	.39	.01	<.05	5.5	19	.03	--	.11
APR												
21...	.1	.41	10	1.6	.40	.03	.09	3.6	16	.02	--	--
JUN												
09...	.0	.28	8.0	1.3	.24	.01	<.05	2.5	12	.02	.022	--
29...	.0	.23	9.0	1.4	--	.05	<.05	2.4	--	--	.036	--
JUL												
19...	.0	.21	8.0	1.2	.17	<.01	<.05	2.2	11	.02	.053	--
AUG												
24...	.0	.32	8.0	1.5	.15	<.01	<.05	2.1	11	.02	.041	--

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
JAN , 1983					
12...	<.100	10	12	22	--
MAR					
07...	<.100	10	10	30	--
31...	<.100	<10	6	28	--
APR					
21...	<.100	<10	10	20	--
JUN					
09...	<.100	<10	<3	3	.50
29...	<.100	<10	14	6	.40
JUL					
19...	<.100	10	6	4	.40
AUG					
24...	<.100	10	11	8	.50

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER, NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE¼NE¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi upstream from White Chuck River, 3.4 mi southeast of Darrington, and at mile 32.5.

DRAINAGE AREA.--152 mi².

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft, from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi downstream at different datum.

REMARKS.--Records fair except those during period of no gage-height record, Apr. 15 to June 9, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--60 years (water years 1918-22, 1929-83), 1,145 ft³/s, 102.30 in/yr, 829,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,100 ft³/s Dec. 26, 1980, gage height, 16.03 ft, from rating curve extended above 15,000 ft³/s; minimum, 115 ft³/s Nov. 15, 16, 30, Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2015	*17,300	*10.59	Jan. 10	0830	5,270	6.51
Jan. 5	1315	4,960	6.37	May 30	unknown	4,690	6.24
Jan. 8	0415	6,880	7.41	July 13	1415	6,070	6.86

Minimum discharge, 242 ft³/s Oct. 1, 2, minimum gage height, 2.88 ft Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	930	628	412	575	881	891	950	2450	1540	1070	854
2	316	795	580	406	530	826	854	960	2160	1940	919	1740
3	508	705	8920	480	494	781	755	910	1890	1780	808	997
4	376	881	6640	622	466	738	687	880	1670	1530	738	729
5	309	1140	2970	3450	438	703	646	960	1520	1590	720	622
6	303	1380	1990	2210	419	695	630	1050	1450	1480	712	523
7	822	1080	1510	2850	419	746	622	1010	1750	1230	695	487
8	741	880	1240	5670	393	1040	606	940	2150	1060	746	432
9	652	741	1070	2900	412	2850	575	840	2190	967	772	412
10	696	652	938	4690	425	2960	552	760	2590	919	844	746
11	723	588	844	3270	630	2170	545	740	2230	1140	967	1860
12	636	548	854	2130	900	1660	515	780	1780	2900	938	1080
13	556	508	910	1700	1200	1440	487	850	1560	4880	738	799
14	508	462	800	1370	1020	1330	466	960	1610	3580	687	678
15	470	440	940	1160	872	1170	450	940	2100	2870	646	598
16	432	500	1840	1020	938	1030	480	840	1750	2190	575	530
17	636	1080	1530	948	1300	919	520	820	2030	1800	523	501
18	548	1100	1440	910	1650	826	590	890	2060	1670	501	494
19	455	970	1190	881	1200	764	730	940	2130	1590	487	466
20	404	850	987	817	1060	712	880	1080	1670	1510	473	412
21	376	723	872	746	938	670	980	1530	1400	1360	445	380
22	1070	620	808	687	987	646	930	1670	1320	1300	438	368
23	1260	556	720	790	1600	646	900	1960	1440	1370	459	350
24	900	508	654	720	1870	630	1100	2220	1380	1340	445	332
25	723	462	614	703	1600	598	1010	2400	1350	1180	412	320
26	990	455	583	755	1330	567	880	2390	1440	1060	393	303
27	1270	477	530	977	1110	552	780	2360	1510	948	380	320
28	1140	768	494	938	967	552	750	2750	1620	997	386	303
29	1050	813	466	790	---	826	770	3570	1650	919	445	287
30	880	732	445	695	---	1200	830	3800	1620	900	560	265
31	786	---	425	630	---	1070	---	3260	---	1020	508	---
TOTAL	20790	22344	44432	46327	25743	32198	21411	46010	53470	50560	19430	18188
MEAN	671	745	1433	1494	919	1039	714	1484	1782	1631	627	606
MAX	1270	1380	8920	5670	1870	2960	1100	3800	2590	4880	1070	1860
MIN	254	440	425	406	393	552	450	740	1320	900	380	265
CFSM	4.41	4.90	9.43	9.83	6.05	6.84	4.70	9.76	11.7	10.7	4.13	3.99
IN.	5.09	5.47	10.87	11.34	6.30	7.88	5.24	11.26	13.09	12.37	4.76	4.45
AC-FT	41240	44320	88130	91890	51060	63860	42470	91260	106100	100300	38540	36080

CAL YR 1982 TOTAL 450422 MEAN 1234 MAX 8920 MIN 254 CFSM 8.12 IN. 110.23 AC-FT 893400
WTR YR 1983 TOTAL 400903 MEAN 1098 MAX 8920 MIN 254 CFSM 7.22 IN. 98.12 AC-FT 795200

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW¼NW¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi southeast of Rockport, 7.6 mi southeast of Sauk, 7.8 mi downstream from Suiattle River, and at mile 5.4.

DRAINAGE AREA.--714 mi².

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year. Published as "near Suiattle Crossing, near Sauk" 1910-12.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft National Geodetic Vertical Datum of 1929 (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1.0 mi downstream to 5.0 mi upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum.

REMARKS.--Records excellent. No regulation. Small diversion for millpond at Darrington and for domestic use. Summer flows augmented by glacier melt at source.

AVERAGE DISCHARGE.--55 years (water years 1929-83), 4,377 ft³/s, 83.25 in/yr, 3,171,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,600 ft³/s Dec. 26, 1980, gage height, 18.24 ft, from rating extended above 50,000 ft³/s; minimum, 572 ft³/s Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2000	*52,500	*13.84	July 13	1700	20,300	9.07
Jan. 8	0700	25,200	9.90				

Minimum discharge, 1,350 ft³/s Sept. 30, gage height, 3.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1580	3500	2730	1900	2520	3380	3340	3680	8960	5540	4820	3390
2	1710	2660	2550	1910	2400	3170	3220	3710	7920	6620	4240	5930
3	2140	2390	27100	2230	2290	3020	2920	3540	6990	6000	3640	3740
4	1820	2740	20100	2660	2200	2910	2680	3430	6210	5210	3380	2970
5	1650	4140	8860	12600	2100	2830	2560	3730	5690	5560	3310	2610
6	1630	5110	6550	8140	1980	2790	2500	4030	5430	5440	3360	2270
7	3220	4020	5020	9450	2010	2810	2500	3900	6490	4550	3270	2160
8	2790	3270	4220	19500	1930	3760	2380	3660	7900	3970	3580	1980
9	2570	2800	3670	10100	1930	8150	2270	3310	8040	3750	3830	1990
10	2700	2510	3310	18400	2090	8910	2210	3020	8280	3520	4320	2550
11	2790	2300	3070	12400	2870	7220	2180	2950	7850	4080	4840	6660
12	2480	2160	3290	8080	3820	5660	2100	3100	6200	10400	4700	4050
13	2240	2050	3450	6390	4760	5050	2020	3340	5390	15700	3560	3080
14	2200	1950	3190	5170	4020	4830	1960	3720	5450	12700	3360	2740
15	2120	1900	3690	4440	3470	4570	1950	3670	7330	10600	3180	2470
16	2010	2150	6880	3970	3610	3760	2030	3320	6420	8080	2860	2270
17	2690	4120	5800	3760	4620	3430	2170	3240	7470	6780	2650	2140
18	2330	3920	5530	3640	6310	3170	2430	3470	7820	6200	2580	2140
19	2070	3520	4720	3600	4530	2970	2930	3660	7410	5920	2520	2040
20	1940	3270	3980	3400	4010	2820	3460	4140	6000	6100	2480	1860
21	1930	2850	3590	3120	3690	2730	3800	5740	5090	5480	2370	1750
22	4730	2500	3430	2910	3670	2690	3610	6220	4720	5240	2310	1720
23	4520	2310	3070	3160	5160	2650	3530	7230	5090	5450	2330	1690
24	3370	2180	2790	3050	6060	2520	4230	8140	5100	5580	2320	1640
25	2780	2070	2630	2970	5450	2380	3900	8780	4870	4980	2270	1600
26	3990	2110	2520	3100	4640	2280	3440	8740	5130	4460	2210	1570
27	4580	2250	2310	4000	4100	2250	3100	8630	5300	3970	2140	1730
28	3870	3840	2220	3910	3690	2230	2990	10000	5770	4270	2110	1570
29	3440	3590	2110	3270	---	2940	3050	12900	6000	3950	2180	1460
30	2930	3110	2030	2940	---	4240	3280	13700	5930	3820	2530	1380
31	2690	---	1960	2710	---	3930	---	11800	---	4340	2690	---
TOTAL	83510	87090	156370	176880	99930	116050	84740	172500	192250	188260	9[illegible]940	75150
MEAN	2694	2903	5044	5706	3569	3744	2825	5565	6408	6073	3095	2505
MAX	4730	5110	27100	19500	6310	8910	4230	13700	8960	15700	4840	6660
MIN	1580	1900	1960	1900	1930	2230	1950	2950	4720	3520	2110	1380
CFSM	3.77	4.07	7.06	7.99	5.00	5.24	3.96	7.79	8.97	8.51	4.33	3.51
IN.	4.35	4.54	8.15	9.22	5.21	6.05	4.42	8.99	10.02	9.81	5.00	3.92
AC-FT	165600	172700	310200	350800	198200	230200	168100	342200	381300	373400	190300	149100

CAL YR 1982 TOTAL 1783980 MEAN 4888 MAX 27100 MIN 1550 CFSM 6.85 IN. 92.95 AC-FT 3539000
WTR YR 1983 TOTAL 1528670 MEAN 4188 MAX 27100 MIN 1380 CFSM 5.87 IN. 79.64 AC-FT 3032000

RESERVOIRS IN SKAGIT RIVER BASIN, WA

12175000 ROSS RESERVOIR.--(See sta 12175000).

12176500 DIABLO RESERVOIR.--Lat 48°42'56", long 121°07'52", in SE¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Diablo Dam on Skagit River, 1.2 mi downstream from Thunder Creek, 6.0 mi northeast of Newhalem, and at mile 101.0. DRAINAGE AREA.--1,125 mi², includes 400 mi² in Canada. PERIOD OF RECORD.--October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (city of Seattle datum). Prior to Oct. 1, 1964, at datum 0.26 ft higher.

REMARKS.--Reservoir is formed by concrete-arch dam, completed in 1930; storage began in October 1929. Usable storage, 8,820 acre-ft between elevations 1,195 ft, normal lower limit of operation, and 1,205 ft, top of taintor gates. Dead storage, below elevation 1,040 ft, 12,900 acre-ft. Crest of spillway is at elevation 1,187 ft. Water used by city of Seattle for power development at Diablo and Gorge powerplants. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft July 14, 1933, elevation, 1,206.5 ft; minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 89,882 acre-ft July 12, elevation, 1,206.00 ft; minimum, 81,940 acre-ft Nov. 22, elevation, 1,197.01 ft.

12177700 GORGE RESERVOIR.--Lat 48°41'53", long 121°12'25", in NW¼ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Gorge Dam on Skagit River, 2.4 mi upstream from Gorge powerplant at Newhalem, and at mile 96.6. DRAINAGE AREA.--1,159 mi², includes 400 mi² in Canada. PERIOD OF RECORD.--June 1960 to current year. GAGE.--Water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or water-stage indicator in powerhouse. Datum of gage is 0.00 ft city of Seattle Gorge High Dam datum, and 1.792 ft below National Geodetic Vertical Datum of 1929 (Corps of Engineers' bench mark).

REMARKS.--Reservoir is formed by concrete arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft between elevations 865 ft, normal lower limit of operation, and 875 ft, top of gates. Lowest outlet at elevation 760 ft. No dead storage. Crest of spillway is at elevation 825 ft. Water used by city of Seattle for power development at Gorge powerplant. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 9,761 acre-ft June 1, 1982, elevation, 880.01 ft; minimum since normal low operating level was reached in December 1960, 1,551 acre-ft July 20, 1965, elevation, 819.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,644 acre-ft July 13, elevation, 879.57 ft; minimum, 6,176 acre-ft Nov. 15, elevation, 863.88 ft.

12191600 BAKER LAKE.--Lat 48°38'58", long 121°41'22", in SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi upstream from Sulphur Creek, 8.0 mi north of Concrete, and at mile 9.3. DRAINAGE AREA.--215 mi². PERIOD OF RECORD.--July 1959 to current year. GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage 220,630 acre-ft between elevations 655 ft, minimum operating pool, and 724 ft, normal full pool. Dead storage below elevation 655 ft, 64,840 acre-ft. Crest of spillway is at elevation 694 ft. Water used by Puget Sound Power and Light Co. for power development. Capacity table furnished by Puget Sound Power and Light Co. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft July 12, 1972, elevation, 724.49 ft; minimum since normal operating level was reached in August 1960, 102,621 acre-ft May 8, 1977, elevation, 674.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 286,624 acre-ft July 12, elevation, 724.23 ft; minimum, 144,662 acre-ft Apr. 14, elevation, 689.80 ft.

12193000 LAKE SHANNON.--Lat 48°32'53", long 121°44'22", in SW¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi north of Concrete, and at mile 1.2. DRAINAGE AREA.--297 mi². PERIOD OF RECORD.--November 1925 to current year. GAGE.--Water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to March 1959, at datum 1.72 ft lower.

REMARKS.--Reservoir is formed by concrete arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft between elevations 355 ft, minimum operating pool, and 438.6 ft, normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft. Water used by Puget Sound Power and Light Co. for power development. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Power and Light Co. from powerplant log. Figures given herein represent contents above elevation 341.7 ft, center line of outlet tunnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft Sept. 17, 1968, elevation, 439.50 ft; minimum since October 1953, 28,260 acre-ft Mar. 6, 1969, elevation, 363.7 ft, not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 159,401 acre-ft July 15, elevation, 438.57 ft; minimum, 66,863 acre-ft Apr. 15, elevation, 389.70 ft.

Reservoirs in Skagit River basin--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-ft)
	12176500 Diablo Reservoir			12177700 Gorge Reservoir		
Sept. 30	1,202.42	86,645	--	870.46	7,448	--
Oct. 31	1,199.17	83,795	-2,850	872.55	7,911	+463
Nov. 30	1,199.35	83,951	+156	872.49	7,898	-13
Dec. 31	1,199.04	83,684	-267	873.97	8,240	+342
CAL YR 1982	--	--	-3,826	--	--	+589
Jan. 31	1,198.58	83,288	-396	872.78	7,964	-276
Feb. 28	1,204.59	88,592	+5,304	874.53	8,373	+409
Mar. 31	1,203.58	87,680	-912	874.64	8,399	+26
Apr. 30	1,200.67	85,103	-2,577	874.38	8,337	-62
May 31	1,201.13	85,508	+405	870.23	7,398	-939
June 30	1,202.37	86,600	+1,092	869.21	7,182	-216
July 31	1,201.30	85,658	-942	872.66	7,936	+754
Aug. 31	1,203.00	87,161	+1,503	873.48	8,126	+190
Sept. 30	1,203.09	87,241	+80	872.54	7,909	-217
WTR YR 1983	--	--	+596	--	--	+461
	12191600 Baker Lake			12193000 Lake Shannon		
Sept. 30	720.19	266,818	--	435.14	151,899	--
Oct. 31	717.24	252,847	-13,971	435.61	152,916	+1,017
Nov. 30	706.62	206,098	-46,749	430.41	141,886	-11,030
Dec. 31	702.77	190,642	-15,456	426.68	134,267	-7,619
CAL YR 1982	--	--	-9,857	--	--	-7,640
Jan. 31	703.90	195,086	+4,444	427.65	136,224	+1,957
Feb. 28	703.62	193,982	-1,104	436.02	153,804	+17,580
Mar. 31	694.25	159,384	-34,598	406.07	95,206	-58,598
Apr. 30	695.23	162,774	+3,390	398.14	81,025	-14,181
May 31	716.43	249,086	+86,312	418.33	118,031	+37,006
June 30	722.08	275,987	+26,901	433.75	148,918	+30,887
July 31	722.64	278,740	+2,753	435.67	153,046	+4,128
Aug. 31	722.16	276,381	-2,359	435.14	151,899	-1,147
Sept. 30	720.05	266,143	-10,238	435.67	153,046	+1,147
WTR YR 1983	--	--	-675	--	--	+1,147

12190710 SWIFT CREEK NEAR CONCRETE, WA

LOCATION.--48°44'07", long 121°39'26", in SE¼NW¼ sec.32 T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, on left bank 200 ft downstream from highway bridge, 14 mi north of Concrete, at mile 0.2, upstream from Baker Lake.

DRAINAGE AREA.--36.4 mi².

PERIOD OF RECORD.--August 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 750 ft, from topographic map.

REMARKS.--Records fair except for periods Aug. 1-16, 1982, Dec. 26 to Jan. 2, Feb. 4-9, and Mar. 29 to June 21, which are poor. No regulation or diversion upstream from the station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,110 ft³/s Dec. 3, 1982, gage height, 9.20 ft; minimum daily, 83 ft³/s Sept. 14, 1982.

EXTREMES FOR CURRENT PERIOD.--
AUGUST TO SEPTEMBER 1982.--Maximum daily discharge, 1,000 ft³/s Aug. 13; minimum daily, 83 ft³/s Sept. 14.

OCTOBER TO SEPTEMBER 1983.--Maximum discharge, 2,110 ft³/s Dec. 3, gage height, 9.20 ft; minimum daily, 88 ft³/s Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR AUGUST TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1											300	184
2											300	234
3											320	279
4											280	399
5											250	222
6											230	173
7											220	162
8											220	150
9											220	423
10											210	256
11											240	273
12											350	217
13											1000	129
14											600	83
15											430	173
16											381	189
17											369	189
18											363	200
19											375	206
20											429	200
21											429	217
22											375	184
23											351	189
24											339	206
25											333	256
26											303	206
27											256	145
28											200	228
29											173	167
30											268	129
31											211	---
TOTAL											10325	6268
MEAN											333	209
MAX											1000	423
MIN											173	83
CFSM											9.16	5.75
IN.											10.57	6.41
AC-FT											20480	12430

12190710 SWIFT CREEK NEAR CONCRETE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	369	256	125	103	309	420	390	390	721	476	622
2	279	285	251	136	103	339	385	380	340	1050	476	677
3	222	256	1430	162	98	321	330	360	300	690	470	567
4	145	616	956	173	95	297	280	360	220	622	429	470
5	113	452	543	452	93	268	250	380	210	665	417	393
6	319	399	393	303	90	285	220	430	250	604	417	375
7	393	333	303	591	98	339	200	470	400	519	417	351
8	262	279	245	834	88	549	190	430	500	452	423	315
9	273	239	206	452	93	1050	180	380	450	429	423	291
10	315	211	189	696	98	783	180	330	1400	423	423	622
11	273	189	178	525	399	585	190	300	1000	1180	423	555
12	211	173	262	351	840	441	160	330	700	1200	405	429
13	195	156	211	256	677	393	140	370	560	1140	393	381
14	200	139	200	195	470	405	130	410	600	671	393	351
15	178	139	321	150	375	327	120	450	700	671	363	321
16	268	189	715	123	464	279	120	350	600	671	315	315
17	268	273	495	162	573	239	130	330	900	665	297	333
18	178	245	411	195	591	217	150	400	1200	659	291	309
19	145	228	363	211	417	200	180	350	1000	646	285	251
20	123	195	285	173	446	189	240	400	800	653	273	234
21	303	167	245	129	345	173	240	450	700	634	262	239
22	1120	145	239	108	495	195	210	500	622	616	262	256
23	604	134	189	103	988	217	210	550	702	616	262	251
24	531	118	178	113	923	184	300	600	715	604	256	234
25	393	108	173	123	659	156	400	560	671	573	234	228
26	690	162	167	256	501	139	320	540	683	501	228	234
27	616	291	160	441	405	156	280	520	702	470	228	228
28	604	476	153	297	351	167	260	600	708	483	369	200
29	429	381	146	195	---	460	350	700	696	470	369	173
30	345	291	139	145	---	600	390	560	708	470	345	162
31	363	---	132	108	---	490	---	450	---	476	297	---
TOTAL	10471	7638	10134	8283	10878	10752	7155	13630	19427	20244	10921	10367
MEAN	338	255	327	267	389	347	239	440	648	653	352	346
MAX	1120	616	1430	834	988	1050	420	700	1400	1200	476	677
MIN	113	108	132	103	88	139	120	300	210	423	228	162
CFSM	9.30	7.02	9.00	7.35	10.7	9.55	6.57	12.1	17.8	18.0	9.68	9.52
IN.	10.72	7.82	10.37	8.48	11.13	11.00	7.32	13.95	19.88	20.72	11.18	10.61
AC-FT	20770	15150	20100	16430	21580	21330	14190	27040	38530	40150	21660	20560

WTR YR 1983 TOTAL 139900 MEAN 383 MAX 1430 MIN 88 CFSM 10.5 IN. 143.17 AC-FT 277500

12190718 PARK CREEK AT UPPER BRIDGE, NEAR CONCRETE, WA

LOCATION.--Lat 48°44'36", long 121°41'23", in NE¼NW¼ sec.31, T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, on left bank 80 ft downstream from U.S. Forest Service Road 1130 bridge, 17 mi north of Concrete, and 2.5 mi upstream from mouth at Baker Lake.

DRAINAGE AREA.--10.5 mi^2.

PERIOD OF RECORD.--June 1982 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,120 ft, from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, July 16 to Aug. 16, 1982, Nov. 16 to Dec. 13, Mar. 1 to June 21, and during period of ice effect, Dec. 30 to Jan. 1, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft^3/s July 13, 1983, gage height, 10.00 ft; minimum daily, 25 ft^3/s Jan. 1, 1983.

EXTREMES FOR CURRENT PERIOD.--

JUNE TO SEPTEMBER 1982.--Maximum discharge, 596 ft^3/s June 19, gage height, 7.83 ft; minimum, 38 ft^3/s Sept. 30, gage height, 5.42 ft.

OCTOBER TO SEPTEMBER 1983.--Maximum discharge, 1,820 ft^3/s July 13, gage height, 10.00 ft; minimum daily, 25 ft^3/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	JUN	JUL	AUG	SEP
1	260	291	150	150
2	240	248	130	216
3	220	349	120	226
4	200	271	110	211
5	190	186	110	146
6	180	173	120	133
7	190	271	130	135
8	210	221	150	136
9	240	206	130	267
10	280	234	120	138
11	320	256	110	160
12	380	275	150	115
13	330	278	270	85
14	300	273	160	70
15	310	204	120	73
16	330	170	110	91
17	370	180	109	99
18	429	190	114	114
19	471	180	136	125
20	453	210	209	125
21	399	180	221	129
22	330	150	182	114
23	314	150	187	120
24	347	190	189	115
25	319	220	180	118
26	318	250	171	77
27	305	270	136	58
28	266	280	109	77
29	292	290	102	58
30	399	210	131	49
31	---	170	115	---
TOTAL	9192	7026	4481	3730
MEAN	306	227	145	124
MAX	471	349	270	267
MIN	180	150	102	49
CFSM	24.3	18.0	11.5	9.85
IN.	27.16	20.76	13.24	11.02
AC-FT	18230	13940	8890	7400

12190718 PARK CREEK AT UPPER BRIDGE, NEAR CONCRETE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	77	60	25	33	52	130	100	150	178	258	366
2	89	50	130	31	31	56	120	90	130	237	204	270
3	56	42	700	32	29	52	110	94	110	139	178	174
4	37	165	350	42	28	48	100	90	94	146	171	138
5	33	102	180	116	28	46	94	100	88	174	206	105
6	89	78	110	61	28	50	88	110	96	147	198	98
7	90	60	70	200	29	70	82	120	110	116	223	86
8	51	45	56	232	28	150	78	100	120	105	304	71
9	57	37	47	86	33	300	74	90	110	100	313	63
10	71	33	44	167	39	180	70	82	500	100	328	251
11	69	31	43	120	142	100	66	78	200	676	274	152
12	56	29	62	79	246	78	62	84	160	1020	205	106
13	78	28	45	61	182	72	58	94	130	1150	212	107
14	97	28	47	47	112	78	56	110	150	635	214	96
15	84	27	96	41	85	68	58	120	170	333	175	86
16	103	45	222	38	118	60	60	100	150	248	153	82
17	66	66	102	54	160	52	64	94	200	230	154	82
18	40	60	72	65	127	46	70	110	300	228	155	74
19	35	56	67	69	95	42	90	100	210	217	151	52
20	31	47	47	55	115	39	100	110	170	250	143	49
21	102	40	42	42	76	37	120	130	150	221	154	69
22	517	35	46	37	135	40	94	140	133	245	168	88
23	159	32	35	37	325	36	100	150	155	269	164	83
24	126	29	31	46	245	34	140	170	156	248	137	72
25	84	28	31	52	127	32	120	180	137	193	125	75
26	194	40	30	103	90	31	96	170	145	149	117	77
27	152	70	28	136	66	35	84	160	164	210	121	75
28	150	130	27	78	56	60	74	190	170	213	175	52
29	83	80	27	52	---	100	78	230	164	175	188	44
30	61	66	26	43	---	170	90	210	148	188	196	40
31	82	---	26	37	---	140	---	170	---	282	204	---
TOTAL	2989	1656	2899	2286	2808	2354	2626	3876	4870	8822	5968	3183
MEAN	95.4	55.2	93.5	73.7	100	75.9	87.5	125	162	285	193	106
MAX	517	165	700	232	325	300	140	230	500	1150	328	366
MIN	31	27	26	25	28	31	56	78	88	100	117	40
CFSM	9.18	5.26	8.91	7.02	9.52	7.23	8.33	11.9	15.4	27.1	18.4	10.1
IN.	10.59	5.87	10.27	8.10	9.95	8.34	9.30	13.73	17.25	31.25	21.14	11.28
AC-FT	5930	3280	5750	4530	5570	4670	5210	7690	9660	17500	11840	6310

WTR YR 1983 TOTAL 44337 MEAN 121 MAX 1150 MIN 25 CFSM 11.5 IN. 157.06 AC-FT 87940

12192600 BEAR CREEK BELOW TRIBUTARIES, NEAR CONCRETE, WA

LOCATION.--Lat 48°37'11", long 121°44'09", in NW¼SE¼SW¼ sec.11, T.36 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank 0.15 mi downstream from highway bridge, and 5.3 mi north of Concrete.

DRAINAGE AREA.--14.4 mi^2.

PERIOD OF RECORD.--April 1982 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 450 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,620 ft^3/s Dec. 3, 1982, gage height, 12.96 ft; minimum, 10 ft^3/s Aug. 27, 1983, minimum gage height, 10.36 ft Sept. 8, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,620 ft^3/s Dec. 3, gage height, 12.96 ft; minimum, 10 ft^3/s Aug. 27, minimum gage height, 10.37 ft Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	118	103	17	58	91	122	58	55	45	36	63
2	19	84	110	22	51	85	127	52	49	79	34	96
3	19	73	985	37	45	72	119	55	42	52	32	36
4	16	89	375	65	38	65	96	52	38	44	30	27
5	15	123	165	320	34	60	83	52	34	41	27	23
6	21	139	114	141	32	66	76	65	34	38	26	21
7	76	109	87	330	41	87	70	66	41	37	25	22
8	47	86	66	709	31	181	65	58	48	37	23	27
9	35	74	52	417	45	340	62	49	42	37	22	48
10	31	65	41	895	46	241	60	42	138	33	24	107
11	28	59	33	417	96	185	63	39	77	91	31	94
12	26	55	70	233	173	150	54	42	57	305	27	63
13	24	51	45	177	201	153	48	51	49	486	22	51
14	23	47	45	132	156	162	44	57	51	535	20	44
15	22	48	77	105	119	138	41	62	60	381	19	38
16	33	92	125	85	147	114	41	46	52	221	18	41
17	49	100	109	83	162	89	42	44	112	159	17	42
18	33	92	130	79	144	68	48	52	119	127	16	39
19	29	98	105	89	127	62	54	48	100	109	16	33
20	27	82	81	76	141	57	63	51	81	114	16	30
21	30	70	77	63	117	54	62	58	68	94	15	28
22	100	59	94	57	130	54	52	62	58	79	14	26
23	60	53	63	76	169	52	52	70	60	70	14	24
24	50	49	48	66	197	46	74	76	72	63	14	23
25	45	45	49	66	153	42	63	76	58	58	12	22
26	156	64	45	114	132	39	58	70	55	54	12	23
27	208	76	34	165	107	46	48	70	52	62	12	23
28	200	169	28	125	100	48	45	81	49	57	15	20
29	125	160	24	94	---	119	48	96	49	46	16	19
30	94	118	21	79	---	119	55	89	46	41	17	18
31	106	---	19	66	---	135	---	68	---	38	15	---
TOTAL	1761	2547	3420	5400	2992	3220	1935	1857	1846	3633	637	1171
MEAN	56.8	84.9	110	174	107	104	64.5	59.9	61.5	117	20.5	39.0
MAX	208	169	985	895	201	340	127	96	138	535	36	107
MIN	14	45	19	17	31	39	41	39	34	33	12	18
CFSM	3.94	5.90	7.64	12.1	7.43	7.22	4.48	4.16	4.27	8.13	1.42	2.71
IN.	4.55	6.58	8.83	13.95	7.73	8.32	5.00	4.80	4.77	9.39	1.65	3.03
AC-FT	3490	5050	6780	10710	5930	6390	3840	3680	3660	7210	1260	2320

WTR YR 1983 TOTAL 30419 MEAN 83.3 MAX 985 MIN 12 CFSM 5.78 IN. 78.58 AC-FT 60340

12192700 THUNDER CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°36'08", long 121°42'17", in SE¼SW¼SE¼ sec.13, T.36 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank 0.6 mi downstream from bridge, 5 mi north of Concrete, and 0.3 mi upstream from Lake Shannon.

DRAINAGE AREA.--22.4 mi².

PERIOD OF RECORD.--August 1982 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft, from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record, Oct. 30 to Nov. 29, Dec. 3 to Feb. 15, and Apr. 27 to June 28, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge recorded, 702 ft³/s July 13, 1983, gage height, 5.78 ft; minimum, 24 ft³/s Aug. 26-28, 1983, gage height, 3.22 ft.

EXTREMES FOR CURRENT PERIOD.--
AUGUST TO SEPTEMBER 1982.--Maximum daily discharge, 200 ft³/s Aug. 13; minimum, 25 ft³/s Sept. 23-24.

OCTOBER TO SEPTEMBER 1983.--Maximum discharge recorded, 702 ft³/s July 13, gage height 5.78 ft, but was probably exceeded on Dec. 3 during period of no gage-height record; minimum, 24 ft³/s Aug. 26-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR AUGUST 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	37	32	110	118	30	75	132	142	170	190	144	59	68
2	62	33	40	90	100	45	70	130	134	150	150	237	54	122
3	70	36	40	78	700	80	66	126	122	160	120	167	52	58
4	62	52	35	90	400	150	62	120	111	150	110	142	49	52
5	56	38	31	140	200	300	60	113	107	150	100	130	47	44
6	52	33	45	100	130	160	58	115	106	180	110	118	45	40
7	48	30	80	90	90	250	64	132	102	180	120	106	42	41
8	44	28	97	80	72	500	54	207	96	160	140	111	41	39
9	42	74	102	70	64	350	75	324	89	140	130	107	39	41
10	40	51	99	64	56	600	100	258	83	120	400	94	40	96
11	42	101	79	58	50	350	150	219	80	110	200	219	73	97
12	80	104	65	54	70	250	220	200	78	120	150	394	59	65
13	200	63	56	50	60	190	270	187	72	130	140	495	44	54
14	120	51	50	48	56	150	180	187	70	150	150	398	39	48
15	90	46	46	47	80	130	140	165	72	170	170	309	36	45
16	72	42	75	70	120	110	185	148	80	140	160	219	34	46
17	64	38	80	100	110	100	219	134	92	130	300	180	34	64
18	58	35	59	94	130	110	225	122	116	150	340	152	32	52
19	53	33	53	90	100	130	175	113	148	140	250	132	31	44
20	51	32	49	86	85	100	182	106	170	150	210	124	29	40
21	47	31	56	72	75	90	165	102	175	160	190	113	28	37
22	44	28	170	60	90	80	490	104	146	180	170	104	27	36
23	41	27	99	52	70	90	258	106	160	200	180	96	27	34
24	38	30	88	48	55	86	252	99	210	220	200	89	26	32
25	36	35	116	45	65	100	219	91	167	220	170	83	25	31
26	34	35	152	70	55	140	190	88	142	200	160	79	24	32
27	33	28	162	130	50	200	160	89	130	200	150	82	24	36
28	32	40	134	180	45	140	142	88	120	230	140	83	26	30
29	30	30	111	160	40	110	---	152	140	270	138	70	30	28
30	90	25	95	142	36	95	---	202	160	230	136	65	31	27
31	45	---	100	---	32	85	---	165	---	200	---	61	26	---
TOTAL	1832	1266	2496	2568	3404	5301	4206	4524	3620	5260	5274	4903	1173	1482
MEAN	59.1	42.2	80.5	85.6	110	171	150	146	121	170	176	158	37.8	49.4
MAX	200	104	170	180	700	600	270	324	210	270	400	495	73	122
MIN	30	25	31	45	32	30	54	88	70	110	100	61	24	27
CFSM	2.64	1.88	3.59	3.82	4.91	7.63	6.70	6.52	5.40	7.59	7.86	7.05	1.69	2.21
IN.	3.04	2.10	4.14	4.26	5.65	8.80	6.98	7.51	6.01	8.73	8.76	8.14	1.95	2.46
AC-FT	3630	2510	4950	5090	6750	10510	8340	8970	7180	10430	10460	9730	2330	2940

WTR YR 1983 TOTAL 44211 MEAN 121 MAX 700 MIN 24 CFSM 5.40 IN. 73.42 AC-FT 87690

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW¼NW¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank just upstream from fish barrier, 0.2 mi northeast of Concrete, 0.3 mi downstream from Baker River powerplant, and at mile 0.7.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1286: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft upstream at datum 172.6 ft National Geodetic Vertical Datum of 1929 (from river-profile survey). Jan. 23 to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--Records good except those for the period Oct. 16 to Nov. 10 and those below 1,500 ft³/s, which are fair, and those below 300 ft³/s, which are poor. Flows on occasion may be affected by backwater from Skagit River during high flows. All diversions returned to river above gage; at times, power generation is shut down for maintenance at Baker River or the fish-barrier dam causing the stage to drop below the control. Water is released through a valve-controlled pipe to the fish ladder located on the left bank just downstream from the gage and control. Flow regulated by Baker and Shannon Lakes (see sta 12191600 and 12191300).

AVERAGE DISCHARGE.--44 years (water years 1911-14, 1944-83), 2,675 ft³/s, 1,938,000 acre-ft/yr, adjusted for storage in Lake Shannon since November 1925, and Baker Lake since July 1959.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Nov. 19, 1962, elevation, 186.6 ft, computation of peak flow over dam; minimum daily, 30 ft³/s Mar. 21-26, 1973, Apr. 26-28, May 7-9, 11, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,400 ft³/s July 13, elevation, 184.57 ft; minimum, about 30 ft³/s on part of each day Apr. 26-28, May 7-9, 11, minimum daily, 85 ft³/s Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1070	4500	3090	773	1270	4030	3770	1890	2230	1810	3080	2240
2	677	4620	2690	789	1410	4040	3760	1810	2160	3320	2530	3950
3	649	2040	6440	904	766	4050	3740	2070	2330	3420	3020	3410
4	906	5390	7260	1540	453	4030	3730	1060	2890	2960	2160	2600
5	1090	5690	6030	4020	541	4030	3720	1780	2440	3220	2090	1420
6	674	5790	5590	3730	618	4010	3700	1630	2250	3040	1790	1720
7	2470	5470	5400	3200	417	4000	3680	1330	2230	3540	1930	1630
8	2510	5610	5220	6900	139	3970	3650	888	2370	1710	2230	799
9	3000	5230	3150	6460	127	3970	3370	1200	3170	2530	2430	1850
10	929	4030	2180	6150	106	3960	1970	1500	3800	1310	2850	2020
11	2310	2380	1630	6620	178	3970	1850	960	3990	3260	3750	3090
12	1300	2290	1770	6160	2470	3980	1880	902	3990	17500	3120	1530
13	1100	2110	1730	5390	3550	3980	1050	948	3450	21000	3240	1070
14	1240	2010	2130	4620	2850	3980	1850	844	3090	14200	2190	1940
15	1200	1970	4730	2640	3110	3980	702	1160	2470	8280	2160	763
16	2170	1970	5580	1390	3290	3990	89	905	3070	5050	1930	1550
17	3100	1920	5360	1240	3430	3980	89	1020	3360	3880	2030	1490
18	1370	1860	4000	1510	4080	3970	189	1320	3600	3850	439	920
19	1590	1870	2910	1660	4080	3940	90	1230	3870	3400	1100	1600
20	2730	1760	2380	1720	4080	3930	438	800	3760	3810	2560	700
21	2490	1600	1750	1630	4080	3920	1270	680	3770	3930	1750	1140
22	3670	725	2020	1300	3720	3890	1170	444	3770	3950	2380	1140
23	3500	1210	1940	1300	4030	3870	1360	399	3780	4000	1900	1100
24	2680	2220	1330	1390	4020	3860	1430	1160	3770	4000	1590	1010
25	3420	1670	1330	1450	4030	3820	1600	1810	3760	4000	85	1420
26	3850	1590	1390	2090	4030	3580	1820	1830	3760	3980	1650	890
27	4200	1470	1310	2720	4030	3810	1410	1820	1330	3980	1570	2060
28	4310	1550	1180	2640	4030	3800	1080	162	102	3980	1480	2090
29	4340	2720	981	2000	---	3800	1960	732	104	2750	2030	1850
30	4400	2960	710	1620	---	3780	2160	873	105	2810	2090	1890
31	4400	---	619	1240	---	3770	---	2180	---	2360	1570	---
TOTAL	73344	86225	93830	86826	68935	121690	58577	37337	84971	150830	64724	50882
MEAN	2366	2874	3027	2801	2462	3925	1953	1204	2832	4865	2088	1696
MAX	4400	5790	7260	6900	4080	4050	3770	2180	3990	21000	3750	3950
MIN	649	725	619	773	106	3580	89	162	102	1310	85	700
AC-FT	145500	171000	186100	172200	136700	241400	116200	74060	168500	299200	128400	100900
MEAN†	2154	1903	2650	2904	2759	2410	1772	3210	3804	4977	2031	1543
CFSM†	7.25	6.41	8.92	9.78	9.29	8.11	5.97	10.8	12.8	16.8	6.84	5.20
IN.†	8.36	7.15	10.29	11.28	9.67	9.36	6.65	12.46	14.29	19.32	7.89	5.80
AC-FT†	132500	113200	163000	178600	153200	148200	105400	197400	226300	306100	124900	91810

CAL YR 1982 TOTAL 1002771 MEAN 2747 MAX 7260 MIN 101 AC-FT 1989000 MEAN† 2723 CFSM† 9.17 IN.† 124.49 AC-FT† 1972000
WTR YR 1983 TOTAL 978171 MEAN 2680 MAX 21000 MIN 85 AC-FT 1940000 MEAN† 2679 CFSM† 9.02 IN.† 122.47 AC-FT† 1940000

† Adjusted for change in contents of Baker Lake and Lake Shannon.

12194000 SKAGIT RIVER NEAR CONCRETE, WA

LOCATION.--Lat 48°31'28", long 121°46'11", in SE¼NE¼ sec.16, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110007, on right bank at Dalles Bridge 1.3 mi southwest of Concrete, 2.4 mi downstream from Baker River, and at mile 54.1.

DRAINAGE AREA.--2,737 mi^2, of which 400 mi^2 is in Canada.

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1736: 1948. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 130.0 ft National Geodetic Vertical Datum of 1929. Prior to Dec. 10, 1924, nonrecording gage 200 ft upstream and Dec. 10, 1924, to Sept. 30, 1937, water-stage recorder at present site; both gages at datum 12.7 ft higher.

REMARKS.--Records excellent. Flow regulated by Ross Reservoir (station 12175000), and Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (stations 12176500, 12177700, 12191600, 12193000).

AVERAGE DISCHARGE.--59 years, 15,130 ft^3/s, 10,962,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154,000 ft^3/s Nov. 27, 1949, gage height, 40.8 ft; minimum, probably less than 2,160 ft^3/s during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 ft^3/s Nov. 14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of 69.3 ft present datum, from floodmarks at site 200 ft upstream, discharge about 500,000 ft^3/s. Records of other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 101,000 ft^3/s Dec. 4, gage height, 33.82 ft; minimum, 5,300 ft^3/s Oct. 3, gage height, 14.10 ft; minimum daily discharge, 5,860 ft^3/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6370	14700	11700	10300	12500	17200	17600	11900	22900	15600	16200	11800
2	5860	12900	11200	9370	13000	16900	16100	13000	20400	18300	15200	19200
3	6140	9450	38700	9840	11800	16300	14700	12900	18900	16600	15500	14700
4	6850	12200	61500	10600	10600	16000	13100	11300	17300	14300	14000	12200
5	6590	14900	27700	24700	11000	15400	12500	12700	15400	15600	13500	10200
6	6350	17300	21800	21300	11500	14700	12500	13700	15000	15900	12600	9400
7	11300	15100	18900	19300	11400	15200	12700	12400	16700	15000	11900	8750
8	10900	14200	17600	43900	10900	17000	14200	12100	19900	12700	13100	7520
9	10200	13600	14500	30300	11000	25500	12900	11700	21500	14100	14000	9890
10	7780	12400	12800	40500	11000	26400	12800	10900	22800	11300	14500	10700
11	10100	10000	12300	35500	12000	23300	12300	11300	21400	15300	17200	18000
12	9230	10000	12400	26900	15700	20100	11600	12500	17900	49500	19000	12300
13	8200	8870	13000	23000	18800	18400	10500	11900	16200	61100	15900	11000
14	7970	7680	13000	20200	17600	19100	11100	12100	15900	57700	14200	11700
15	7400	7980	16700	17000	16200	18500	10800	12800	19000	44700	12500	9320
16	7680	9150	22200	14200	16700	17200	10300	11700	18500	32000	10600	9430
17	10200	10300	20300	13500	18300	16300	8200	11600	21100	23200	10500	9170
18	8870	11600	17600	13300	23000	15200	8930	11800	22500	23900	9010	8150
19	8930	11100	15600	13800	19300	14100	9920	11400	20000	21700	8700	8930
20	10000	10500	15300	14800	17700	13600	11700	11800	17400	22300	10000	7860
21	8810	11500	13700	13200	17200	14200	13300	14100	15900	20400	8650	7780
22	15900	11500	13600	11000	17000	14100	12400	14900	15600	19800	8600	8000
23	15700	11600	12600	10600	19800	14400	11900	17400	16300	20200	9170	7980
24	11300	11800	12100	10700	21700	13100	12500	20200	16800	20500	9630	7900
25	11100	9850	12000	11800	21000	12900	13200	23200	15700	20100	7420	7810
26	13700	9240	11900	12900	18300	12100	12900	23700	15500	18900	8330	7080
27	17500	8500	12800	14800	17100	12300	11200	23100	14000	17300	7470	8680
28	16500	9870	12100	16100	17100	15200	10600	22700	13600	16300	7050	8530
29	15400	12400	11300	14700	---	17900	11900	27600	14300	14200	8280	7930
30	13500	11900	11000	13300	---	19000	11800	29400	14300	13800	9480	7120
31	12900	---	10400	12200	---	18600	---	28100	---	13900	9840	---
TOTAL	319230	342090	528300	553610	439200	520200	366150	485900	532700	696200	362030	299030
MEAN	10300	11400	17040	17860	15690	16780	12210	15670	17760	22460	11680	9968
MAX	17500	17500	61500	43900	23000	26400	17600	29400	22900	61100	19000	19200
MIN	5860	7680	10400	9370	10600	12100	8200	10900	13600	11300	7050	7080
AC-FT	633200	678500	1048000	1098000	871200	1032000	726300	963800	1057000	1381000	718100	593100

CAL YR 1982 TOTAL 5866790 MEAN 16070 MAX 61500 MIN 5840 AC-FT 11637000
WTR YR 1983 TOTAL 5444640 MEAN 14920 MAX 61500 MIN 5860 AC-FT 10799000

12197700 WISEMAN CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'49", long 122°08'08", in SW¼SW¼ sec.11, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 200 ft upstream from State Highway 20 crossing, and 3.4 mi west of Lyman.

DRAINAGE AREA.--3 mi², approximately.

PERIOD OF RECORD.--May 1974 to June 1983 (discontinued).

REVISED RECORDS.--WRD WA-76-1: 1974(M), 1975.

GAGE.--Water-stage recorder. Elevation of gage is 100 ft, from topographic map.

REMARKS.--Records fair except those above 50 ft³/s and during period of unstable control Jan. 10 to Feb. 24, which are poor. No known regulation or diversion upstream from station.

AVERAGE DISCHARGE.--8 years (1974-82), 13.2 ft³/s, 9,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined but exceeded 2,000 ft³/s Jan. 10, 1983; minimum, 0.65 ft³/s Sept. 25, 1974, Aug. 17, 18, 1977; minimum gage height, 1.24 ft Aug. 9, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October to June, not determined but exceeded 2,000 ft³/s Jan. 10; minimum, 1.5 ft³/s Oct. 15, gage height, 1.47 ft

REVISIONS.--The maximum discharges for some water years have been revised, as shown in the following table. They supercede figures published in reports for 1980, 1981, and 1982.

Water year	Date	Discharge (ft³/s)	Gage height (ft)
1980	Dec. 14, 1979	970	4.52
1981	Nov. 8, 1980	213	3.18
1982	Jan. 23, 1982	966	4.57

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO JUNE 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	9.4	23	6.2	9.5	12	12	7.9	5.5			
2	2.6	6.2	17	7.4	8.9	12	11	7.3	5.7			
3	2.5	4.7	189	11	8.9	12	10	7.1	5.7			
4	2.1	6.2	58	21	8.6	11	10	6.3	4.8			
5	2.0	8.8	23	120	8.4	11	12	6.1	4.4			
6	2.5	8.8	16	39	8.1	13	10	6.6	4.4			
7	13	7.4	12	91	8.9	12	9.8	5.7	4.2			
8	5.2	6.0	8.8	198	8.1	20	8.4	5.7	4.0			
9	3.3	5.7	7.7	108	7.9	18	8.1	6.8	4.0			
10	2.5	5.2	7.1	500	7.9	16	7.1	6.8	9.5			
11	2.2	4.5	6.5	200	9.8	15	7.3	6.1	10			
12	2.0	4.7	16	60	12	13	6.8	5.9	9.2			
13	1.7	4.1	19	40	13	13	6.6	5.5	7.3			
14	1.6	3.9	13	30	15	12	6.3	5.7	6.3			
15	1.6	4.1	11	25	14	12	6.3	13	12			
16	3.3	7.4	16	20	15	12	6.3	10	8.6			
17	5.4	22	15	19	17	9.8	6.3	9.8	17			
18	3.9	23	17	18	15	8.6	6.3	11	18			
19	2.5	21	15	16	13	8.4	6.1	9.5	16			
20	2.2	21	14	15	14	8.4	6.1	8.6	21			
21	2.5	15	11	13	13	8.4	6.1	8.4	20			
22	6.0	11	11	12	15	8.1	5.7	7.3	17			
23	4.7	9.8	9.8	13	18	8.1	5.7	6.8	17			
24	3.3	9.1	9.8	12	20	7.9	10	6.1	24			
25	2.5	8.4	10	11	16	7.9	12	5.9	16			
26	3.3	11	9.8	12	14	7.6	13	5.7	14			
27	9.8	16	8.8	100	13	7.9	11	5.5	12			
28	7.4	21	7.7	32	12	7.6	9.5	5.0	11			
29	7.1	23	7.4	12	---	10	9.5	4.2	11			
30	5.2	18	7.1	10	---	10	8.4	4.2	10			
31	6.2	---	6.5	9.8	---	12	---	4.8	---			
TOTAL	122.3	326.4	603.0	1781.4	344.0	344.7	253.7	215.3	329.6			
MEAN	3.95	10.9	19.5	57.5	12.3	11.1	8.46	6.95	11.0			
MAX	13	23	189	500	20	20	13	13	24			
MIN	1.6	3.9	6.5	6.2	7.9	7.6	5.7	4.2	4.0			
AC-FT	243	647	1200	3530	682	684	503	427	654			

CAL YR 1982 TOTAL 4748.7 MEAN 13.0 MAX 222 MIN 1.6 AC-FT 9420

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°26'42", long 122°20'03", in SE¼SE¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on draw west of and 150 ft downstream from bridge on former U.S. Highway 99, 1.5 mi north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7.

DRAINAGE AREA.--3,093 mi², of which 400 mi² is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary water-stage recorder in bridge pier 0.2 mi downstream from base gage from Dec. 3, 1957, to Oct. 15, 1964.

REMARKS.--Water-discharge records good except those during periods of no gage-height record Oct. 1-7, 11, 14-16, 21, Dec. 6-14, Dec. 29 to Jan. 4, Sept. 12-28, which are fair. Flow regulated by Ross Reservoir (station 12175000) and Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--43 years, 16,700 ft³/s, 12,100,000 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144,000 ft³/s Feb. 11, 1951, elevation, 36.85 ft; minimum, 2,740 ft³/s Oct. 26, 1942, elevation, 7.37 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft, from Great Northern Railway highwater profile, discharge 180,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	1245	*71,600	*28.65	July 14	0715	65,700	27.61
Jan. 11	0100	57,700	26.04				

Minimum daily discharge, 6,200 ft³/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6800	15600	14100	10800	13600	18900	20300	12500	25100	15500	17000	10900
2	6200	15300	13300	10300	14500	18700	19000	13500	21900	19000	16700	20600
3	6600	12000	25000	10400	14000	18100	17000	13700	20400	19300	16900	17800
4	7400	11800	63200	11800	12200	17600	15800	12800	19100	16200	15700	14300
5	7500	16000	37100	23000	11900	17000	14200	12300	16700	15800	14800	12000
6	7200	19700	24500	29300	12500	16700	14100	14300	15900	16500	14200	10900
7	9600	17700	22000	22500	12800	16200	13900	13900	16600	16200	13400	10500
8	12400	15600	20500	42200	12100	8100	15500	13200	19400	14700	13300	9560
9	11300	15200	17500	40000	12000	24300	14000	12800	21900	14200	15100	9880
10	9610	14500	15000	46600	12400	29900	14000	12000	22100	13000	15200	10900
11	8620	11500	14300	50500	13000	27200	13500	11800	24900	13000	16900	18300
12	10600	11000	14100	34500	16600	23400	13100	12700	20100	35900	20500	15500
13	8970	10900	14500	28100	22400	21300	11900	12700	17900	48500	17600	12500
14	8550	8890	15000	24400	21400	21300	11700	12900	16700	62800	15700	13000
15	8110	8500	17200	21200	18900	21400	12200	13400	18200	53600	13900	10500
16	8020	10400	22900	17900	18400	20000	11600	13000	20500	39000	12600	11000
17	10200	12000	24500	16100	19600	18200	9720	12400	20100	27700	11400	10500
18	9540	13800	21600	17100	23900	17200	9750	12500	24900	25800	11100	9700
19	9610	13200	18800	16300	22700	16300	10500	12500	23400	24600	9560	10500
20	10100	13000	17800	17200	20500	15300	11500	12600	19900	23600	10300	9200
21	9400	12500	16400	16200	19900	15000	13800	13700	18300	23400	10200	8700
22	13400	12900	15300	14400	19200	15400	13800	15500	16900	21800	9560	8900
23	19200	12000	14600	12900	21300	15400	13400	16700	17200	21800	9520	9000
24	13100	13400	13500	12300	23900	15100	12700	19600	18200	22000	10400	8900
25	11900	11900	13100	13600	24200	13900	14200	21900	18100	21800	9790	8600
26	13300	10400	13200	14600	21800	13500	14300	23700	16600	21200	8370	8100
27	18900	10800	13300	16700	19600	13600	12700	23400	16000	19500	8940	8000
28	18000	11800	13400	19600	18800	15000	11700	23400	14400	18400	8160	9600
29	17500	14800	11900	18200	---	19000	12200	25200	14700	16600	8300	8640
30	15600	14800	11900	16100	---	20800	12700	29300	15300	15800	9750	7860
31	14100	---	11000	14900	---	21600	---	28600	---	15100	10900	---
TOTAL	341330	392090	580500	659700	494100	575400	404770	498500	571400	732300	395750	334340
MEAN	11010	13070	18730	21280	17650	18560	13490	16080	19050	23620	12770	11140
MAX	19200	19700	63200	50500	24200	29900	20300	29300	25100	62800	20500	20600
MIN	6200	8500	11000	10300	11900	13500	9720	11800	14400	13000	8160	7860
AC-FT	677000	777700	1151000	1309000	980000	1141000	802900	988800	1133000	1453000	785000	663200

CAL YR 1982 TOTAL 6491650 MEAN 17790 MAX 63200 MIN 6200 AC-FT 12876000
WTR YR 1983 TOTAL 5980180 MEAN 16380 MAX 63200 MIN 6200 AC-FT 11862000

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1974 to November 1981.
WATER TEMPERATURES: July 1962 to August 1970, February 1974 to November 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)
NOV , 1982												
29...	0930	15200	55	6.9	6.0	10	11.0	--	220	980	22	0
JAN , 1983												
19...	1000	17700	64	7.6	6.0	6.5	11.8	96	K80	470	27	0
MAR												
21...	1115	15600	60	E7.5	7.0	2.0	11.8	98	K18	K16	27	0
MAY												
17...	0935	14400	57	6.7	9.5	.80	11.8	--	<1	K210	24	0
JUL												
26...	1100	21100	43	7.4	12.5	8.4	12.1	116	38	4600	20	0
SEP												
28...	1215	8520	54	7.9	11.0	3.4	10.6	95	62	--	23	0

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
NOV , 1982												
29...	6.5	1.4	1.2	10	.1	.50	23	8.0	.90	<.10	6.2	38
JAN , 1983												
19...	8.2	1.6	1.4	10	.1	.70	28	5.2	1.0	<.10	7.6	40
MAR												
21...	8.2	1.5	1.4	10	.1	.70	28	5.4	.90	<.10	7.9	39
MAY												
17...	7.6	1.3	1.3	10	.1	.60	25	4.4	.80	<.10	6.7	36
JUL												
26...	6.0	1.1	1.1	11	.1	.60	21	4.0	.50	<.10	5.3	22
SEP												
28...	7.1	1.4	1.4	11	.1	.60	25	5.8	1.2	<.10	6.6	39

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED TONS PEP DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	ALUMINUM, DISSOLVED (UG/L AS AL)
NOV , 1982											
29...	39	.05	1560	13	.19	.060	.80	.080	.020	<.010	40
JAN , 1983											
19...	43	.05	1910	26	.23	.090	.60	.160	.030	.010	30
MAR											
21...	43	.05	1640	4	.16	.080	.60	.200	.010	<.010	--
MAY											
17...	38	.05	1400	3	.10	<.060	1.2	.010	.010	<.010	20
JUL											
26...	31	.03	1250	20	<.10	.060	.40	.020	.020	<.010	30
SEP											
28...	39	.05	897	17	<.10	.030	.30	<.010	<.010	<.010	--

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

ILABLE

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV , 1982 29...	1	11	<.5	<1	1	<3	3	42	<1	7	5
JAN , 1983 19...	1	13	<.5	<1	<1	<3	2	59	2	13	10
MAR 21...	--	--	--	--	--	--	--	--	--	--	--
MAY 17...	1	17	.5	<1	<1	<3	1	40	1	6	7
JUL 26...	<1	10	<.5	<1	<1	<3	2	35	<1	21	7
SEP 28...	--	--	--	--	--	--	--	--	--	--	--

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982 29...	<.1	<10	<1	<1	<1	37	<6	16	62	2540	40
JAN , 1983 19...	<.1	<10	<1	<1	<1	43	<6	8	62	2960	37
MAR 21...	--	--	--	--	--	--	--	--	134	5640	--
MAY 17...	<.1	<10	<1	<1	<1	39	<6	9	29	1130	11
JUL 26...	<.1	<10	1	<1	<1	27	<6	23	39	2220	52
SEP 28...	--	--	--	--	--	--	--	--	15	345	--

12202500 WHATCOM LAKE NEAR BELLINGHAM, WA

LOCATION.--Lat 48°44'55", long 122°23'40", in SW¼SW¼ sec.26, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on west shore, 1.0 mi east of Bellingham, near Strawberry Point, at Geneva.

DRAINAGE AREA.--55.9 mi² at outlet of lake.

PERIOD OF RECORD.--February 1913 to September 1914, October 1978 to current year.

GAGE.--Staff gage. Datum of gage is 7.03 ft National Geodetic Vertical Datum of 1929 (levels by city of Bellingham).

REMARKS.--Lake is formed by concrete control dam completed to elevation 315.00 ft in 1937. The dam has three 18 ft by 6 ft taintor gates that raise from the bottom. Water is diverted from Whatcom Lake at intake structure located near the intersection of Cable and Whatcom Boulevards. Water use is for both municipal and industrial supply for the city of Bellingh

Since April 1962, at times water is diverted from Middle Fork Nooksack River to Whatcom Lake via Anderson Creek to supplement Whatcom Creek.

COOPERATION.--Record furnished by city of Bellingham.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 315.75 ft Feb. 19, 1913; minimum observed, 311.30 ft Nov. 29, 1979 Nov. 2, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum observed gage height, 316.22 ft Feb. 1, 1971; minimum observed, 308.38 ft Dec. 5, 1957, record furnished by city of Bellingham.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 315.38 ft Jan. 11; minimum observed, 311.30 ft Nov. 2.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0830

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313.78	311.32	311.56	---	312.07	311.43	312.62	---	---	---	---	313.70
2	---	311.30	311.52	---	312.00	311.44	---	---	313.89	---	314.00	---
3	---	311.38	311.76	311.66	311.90	311.43	---	---	---	---	---	---
4	313.24	311.50	---	311.66	311.82	311.43	313.04	---	---	---	---	---
5	313.08	311.54	---	311.92	---	---	313.10	---	---	314.20	313.98	---
6	312.90	---	312.38	312.34	---	---	313.15	313.70	313.90	---	---	313.72
7	312.90	---	312.32	312.42	311.67	311.46	313.20	---	---	---	---	313.67
8	312.74	311.70	312.23	---	311.62	311.50	313.22	---	---	314.22	313.97	313.62
9	---	311.70	312.14	---	311.64	311.59	---	313.81	---	---	---	---
10	---	311.70	312.07	314.50	311.58	---	---	---	314.00	---	---	---
11	312.30	311.70	---	315.25	311.58	311.74	313.30	---	---	314.25	---	---
12	312.14	311.68	---	315.28	---	---	313.30	---	---	314.22	313.98	313.60
13	312.08	---	311.94	314.94	---	---	313.27	313.84	314.02	314.20	---	---
14	311.95	---	311.90	314.74	311.54	312.00	313.27	---	---	314.18	---	---
15	311.75	311.66	311.90	---	311.54	312.06	313.26	---	---	314.18	313.96	313.54
16	---	311.64	311.90	314.40	311.56	312.10	---	---	---	---	---	---
17	---	311.60	311.90	314.22	311.54	312.12	---	---	314.18	---	---	---
18	311.63	311.60	---	314.15	311.54	---	313.26	---	---	314.00	---	---
19	311.63	311.60	---	313.90	---	---	---	---	---	314.04	313.90	313.34
20	311.63	---	---	313.75	---	---	---	313.76	314.08	314.06	---	---
21	311.64	---	312.04	313.55	311.54	312.22	---	---	---	---	---	313.04
22	311.64	311.68	312.15	---	311.54	312.22	313.34	---	---	314.03	313.86	---
23	---	311.60	---	313.15	---	312.25	---	---	314.03	---	---	312.94
24	---	311.57	---	312.96	---	---	---	---	---	---	---	---
25	311.35	---	---	312.80	---	312.25	---	---	---	313.98	---	---
26	311.40	---	---	312.72	---	---	313.50	---	---	---	313.80	---
27	311.42	---	---	312.65	---	---	---	---	314.08	---	---	312.38
28	311.42	---	311.90	312.47	311.47	312.30	---	---	---	314.02	---	---
29	311.40	311.50	311.96	---	---	312.34	313.54	---	---	314.00	---	---
30	---	311.55	---	---	---	312.47	---	---	314.12	---	313.70	312.00
31	---	---	---	312.20	---	312.58	---	313.87	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

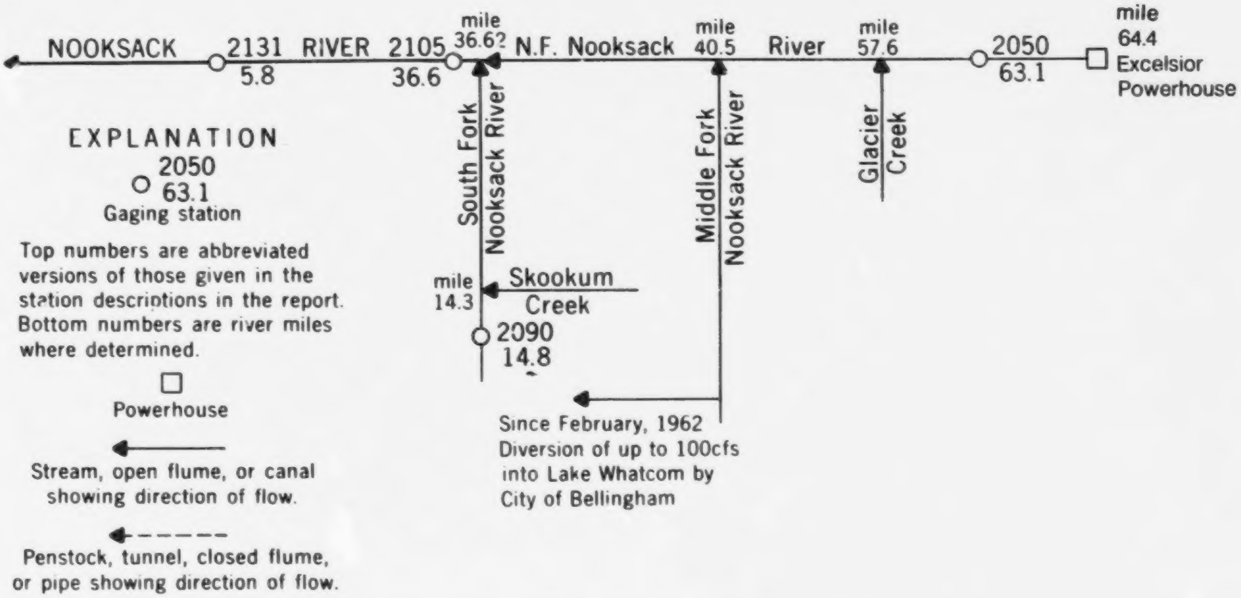
NOOKSACK
2131
5.8
RIVER
2105
36.6
mile
36.6?
N.F. Nooksack
mile
40.5
River
mile
57.6
2050
63.1
mile
64.4
Excelsior
Powerhouse
South Fork
Nooksack River
Middle Fork
Nooksack River
Glacier
Creek
mile
14.3
Skookum
Creek
2090
14.8
Since February, 1962
Diversion of up to 100cfs
into Lake Whatcom by
City of Bellingham
EXPLANATION
2050
63.1
Gaging station
Top numbers are abbreviated
versions of those given in the
station descriptions in the report.
Bottom numbers are river miles
where determined.
Powerhouse
Stream, open flume, or canal
showing direction of flow.
Penstock, tunnel, closed flume,
or pipe showing direction of flow.

Figure 18.—Gaging stations in Nooksack River basin.

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE¼SW¼ sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi downstream from Cascade Creek, 0.3 mi downstream from Deadhorse Creek, 4.8 mi east of Glacier, 5.5 mi upstream from Glacier Creek, and at mile 63.1.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1937 to current year. Published as "Nooksack River above Cascade Creek, near Glacier" 1937-58 and as "Nooksack River below Cascade Creek, near Glacier" 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Altitude of gage is 1,245 ft, from river-profile map. Supplementary gage on left bank, at datum 1.19 ft lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records good. No diversion above station. Some regulation at low flow by powerplant at Excelsior. Summer flows augmented by glacier melt.

AVERAGE DISCHARGE.--46 years, 776 ft³/s, 100.36 in/yr, 562,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Nov. 26, 1949, gage height, 10.50 ft supplementary gage, from rating curve extended above 2,900 ft³/s on basis of contracted-opening measurement at gage height 8.13 ft, supplementary gage; minimum, 60 ft³/s Mar. 12, 1969; minimum daily, 98 ft³/s Jan. 8, 1979, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 22	1400	5,350	6.74	June 10	0900	4,070	6.01
Dec. 3	1900	6,660	7.58	July 12	0400	*6,880	*7.73

Minimum discharge, 206 ft³/s Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	306	765	502	212	368	575	440	700	1900	1360	1280	1190
2	451	666	476	222	329	552	453	720	1740	1720	1120	1270
3	353	624	3370	228	302	511	412	720	1530	1320	977	899
4	319	1040	2170	230	279	476	376	700	1330	1190	892	785
5	282	921	1030	394	261	446	360	680	1190	1340	926	650
6	502	865	776	338	251	435	355	700	1210	1260	914	601
7	648	753	616	597	246	462	350	740	1500	1060	930	554
8	481	672	534	1320	227	610	329	740	1850	903	1210	476
9	456	607	473	757	245	1920	310	720	1720	836	1210	443
10	523	561	424	1680	247	1580	297	720	2940	832	1270	748
11	529	523	383	1200	610	1210	280	720	1780	2000	1230	834
12	456	502	451	840	1540	934	264	740	1320	4360	977	639
13	461	466	420	687	1210	880	250	760	1190	5160	925	575
14	513	436	385	568	846	897	243	800	1320	4580	972	554
15	502	422	550	489	673	745	246	950	1760	2880	839	500
16	556	451	1250	439	713	645	266	880	1520	1860	740	504
17	529	507	821	408	870	574	297	840	3020	1640	700	500
18	389	481	652	433	960	513	362	950	2220	1560	661	439
19	344	456	586	466	716	475	470	1000	1600	1480	648	369
20	315	436	502	434	792	441	585	1100	1360	1530	615	341
21	607	403	453	396	643	415	800	1300	1210	1400	597	345
22	4070	371	427	359	725	406	750	1430	1210	1380	605	390
23	2080	362	372	340	1830	397	740	1640	1350	1480	616	403
24	1830	344	338	359	1770	373	850	1830	1280	1420	576	390
25	1270	331	320	371	1230	351	800	1960	1210	1220	514	365
26	1540	362	297	611	929	333	750	1890	1290	1040	490	390
27	1450	456	269	957	755	361	700	1910	1360	1040	505	408
28	1240	805	257	692	647	349	680	2300	1430	1180	716	321
29	994	666	240	542	---	508	680	2870	1460	996	827	288
30	852	556	229	462	---	573	680	2910	1470	1020	781	263
31	772	---	221	405	---	482	---	2370	---	1280	703	---
TOTAL	25620	16810	19794	17436	20214	19429	14375	38290	47270	52327	25966	16434
MEAN	826	560	639	562	722	627	479	1235	1576	1688	838	548
MAX	4070	1040	3370	1680	1830	1920	850	2910	3020	5160	1280	1270
MIN	282	331	221	212	227	333	243	680	1190	832	490	263
CFSM	7.87	5.33	6.09	5.35	6.88	5.97	4.56	11.8	15.0	16.1	7.98	5.22
IN.	9.08	5.96	7.01	6.18	7.16	6.88	5.09	13.57	16.75	18.54	9.20	5.82
AC-FT	50820	33340	39260	34580	40090	38540	28510	75950	93760	103800	51500	32600

CAL YR 1982 TOTAL 302175 MEAN 828 MAX 4070 MIN 187 CFSM 7.89 IN. 107.06 AC-FT 599400
WTR YR 1983 TOTAL 313965 MEAN 860 MAX 5160 MIN 212 CFSM 8.19 IN. 111.23 AC-FT 622700

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA

LOCATION.--Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi upstream from Skookum Creek, 3.7 mi east of Wickersham, and at mile 14.8.

DRAINAGE AREA.--103 mi².

PERIOD OF RECORD.--October 1933 to October 1977, June to September 1978, October 1980 to current year (seasonal records only).

REVISED RECORDS.--WSP 832: 1935-36.

GAGE.--Water-stage recorder. Altitude of gage is 385 ft, from river-profile map. Prior to July 9, 1934, nonrecording gage, at same site and datum.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--44 years (water years 1934-77), 741 ft³/s, 97.70 in/yr, 536,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Nov. 3, 1955, gage height, 13.40 ft, from rating curve extended above 11,000 ft³/s; minimum, 66 ft³/s Oct. 9, 1940, Sept. 11-13, 1944; minimum gage height, 1.80 ft Sept. 16, 17, 1973.

EXTREMES FOR JUNE TO OCTOBER.--Maximum discharge, 4,270 ft³/s July 14, gage height, 6.62 ft; minimum, 129 ft³/s Aug. 27, 28, gage height, 2.20 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JUNE 1983 TO OCTOBER 1984
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	720	500	311	672	202
2	630	1100	283	1610	194
3	582	678	269	500	208
4	520	465	256	396	308
5	480	451	246	311	243
6	456	412	243	272	211
7	537	376	233	304	211
8	642	341	233	304	205
9	636	404	233	460	199
10	1220	334	220	855	194
11	771	442	246	1030	188
12	531	2270	262	495	185
13	438	3030	214	372	180
14	442	3190	197	311	164
15	806	2450	188	276	159
16	576	1280	177	279	162
17	1270	939	177	290	202
18	1410	756	174	297	249
19	1260	636	164	272	211
20	841	848	159	252	304
21	714	672	152	246	315
22	588	537	147	239	1350
23	708	485	145	233	564
24	876	442	143	224	341
25	744	392	140	217	322
26	672	357	136	217	269
27	630	412	131	262	252
28	594	480	145	227	233
29	553	368	246	214	217
30	548	326	239	208	495
31	---	322	202	---	813
TOTAL	21395	25695	6311	11845	9350
MEAN	713	829	204	395	302
MAX	1410	3190	311	1610	1350
MIN	438	322	131	208	159
CFSM	6.92	8.05	1.98	3.83	2.93
IN.	7.73	9.28	2.28	4.28	3.38
AC-FT	42440	0970	12520	23490	18550

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE¼SE¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft downstream from South Fork, 1.1 mi southeast of Deming, and at mile 36.6.

DRAINAGE AREA.--584 mi², includes 5 mi² in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964 (discharges above 3,500 ft³/s only), October 1964 to current year. Published as "near Deming" 1910-11.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft National Geodetic Vertical Datum of 1929. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Records fair. Slight regulation by powerplant at Excelsior. Since February 1962, city of Bellingham diverts up to 100 ft³/s from the Middle Fork for municipal use. Summer flows augmented by glacier melt at source.

AVERAGE DISCHARGE.--41 years (water years 1936-57, 1965-83), 3,353 ft³/s, 77.97 in/yr, 2,429,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s Feb. 10, 1951, gage height, 15.69 ft, from rating curve extended above 25,000 ft³/s; maximum gage height, 15.89 ft Dec. 3, 1975; minimum recorded discharge, 502 ft³/s Nov. 29, 1952, gage height, 3.72 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft. Peak of Feb. 27, 1932, reached a stage of 16.8 ft, from floodmarks, discharge, 49,300 ft³/s. Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2200	*29,600	*13.96	Jan. 10	1300	27,800	13.61
Jan. 8	0300	19,200	11.72				

Minimum discharge, 968 ft³/s Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	3370	2780	1840	2340	3080	3020	2540	4540	3210	2870	2750
2	1210	2450	2550	1880	2310	3080	3370	2510	4050	4690	2620	5360
3	1270	2100	15500	2360	2240	2950	3200	2510	3680	3730	2410	3200
4	1090	3310	14300	2740	2210	2810	2750	2500	3200	3070	2260	2740
5	999	3570	7160	8990	2160	2660	2650	2590	2870	3240	2280	2260
6	1340	3630	4910	5670	2100	2690	2630	2690	2770	3140	2230	2040
7	3430	3010	3710	6280	2060	2740	2610	2770	3260	2800	2230	2100
8	2220	2530	3130	14600	2020	4520	2570	2700	3910	2690	2510	1970
9	1780	2230	2750	8420	1970	8550	2500	2530	3900	2660	2580	2060
10	1720	2020	2490	23000	1950	6790	2410	2420	6150	2620	2620	2400
11	1660	1850	2260	14200	2540	5540	2340	2370	4910	3680	2630	4310
12	1470	1740	3050	7960	6550	4270	2260	2330	3550	10900	2290	2800
13	1360	1640	3340	5960	6370	4070	2170	2370	3020	11500	2160	2230
14	1420	1520	2690	4730	5070	4560	2100	2820	3080	13000	2170	2030
15	1380	1490	3300	3980	3700	3810	1990	2940	4270	10400	2030	1960
16	1460	2140	6730	3480	4520	3210	1900	2570	3670	6150	1930	1800
17	2260	2700	4690	3180	4360	2820	1870	2370	6170	4760	1880	1750
18	1600	2730	4130	3240	4690	2650	1860	2890	6770	4240	1840	1700
19	1350	2690	3490	3520	3620	2650	1870	2940	5340	3900	1840	1600
20	1230	2420	2990	3180	3750	2610	2050	3020	4000	4010	1800	1500
21	1500	2140	2730	2800	3370	2550	2890	3830	3630	3750	1780	1400
22	7140	1850	3010	2530	4080	2500	2650	3880	3310	3480	1750	1400
23	5340	1710	2650	2410	7280	2470	2610	4380	3620	3480	1730	1450
24	3930	1590	2360	2470	8190	2420	3130	4800	3810	3380	1710	1400
25	3160	1490	2280	2550	6060	2370	2870	5030	3460	3050	1620	1300
26	4000	1660	2280	3260	4690	2310	2690	4710	3430	2780	1550	1350
27	6430	2260	2050	5090	3900	2260	2620	4710	3370	2730	1530	1500
28	5130	4430	1970	4030	3400	2210	2580	5320	3380	3010	1630	1300
29	3830	4130	1900	3080	---	2950	2540	6430	3350	2650	2100	1200
30	2950	3160	1860	2710	---	4120	2510	6660	3430	2550	2150	1150
31	2660	---	1840	2430	---	3460	---	5730	---	2810	2040	---
TOTAL	77399	73560	120880	162570	107500	105680	75210	107860	117900	138060	64770	62010
MEAN	2497	2452	3899	5244	3839	3409	2507	3479	3930	4454	2089	2067
MAX	7140	4430	15500	23000	8190	8550	3370	6660	6770	13000	2870	5360
MIN	999	1490	1840	1840	1950	2210	1860	2330	2770	2550	1530	1150
CFSM	4.28	4.20	6.68	8.98	6.57	5.84	4.29	5.96	6.73	7.63	3.58	3.54
IN.	4.93	4.69	7.70	10.36	6.85	6.73	4.79	6.87	7.51	8.79	4.13	3.95
AC-FT	153500	145900	239800	322500	213200	209600	149200	213900	233900	273800	128500	123000

CAL YR 1982 TOTAL 1270229 MEAN 3480 MAX 17400 MIN 999 CFSM 5.96 IN. 80.91 AC-FT 2519000
WTR YR 1983 TOTAL 1213399 MEAN 3324 MAX 23000 MIN 999 CFSM 5.69 IN. 77.29 AC-FT 2407000

[illegible] AVAILABLE

12213100 NOOKSACK RIVER AT FERNDALE, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE¼NW¼ sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft downstream from highway bridge at Ferndale, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--786 mi², of which 48.9 mi² is in Canada.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft National Geodetic Vertical Datum of 1929. Prior to July 18, 1968, at site 220 ft upstream at datum 4.21 ft higher.

REMARKS.--Records good. Slight regulation by powerplant at Excelsior. City of Bellingham diverts up to about 100 ft³/s at times from Middle Fork Nooksack River for municipal use. City of Ferndale diverts unknown quantities for municipal use.

AVERAGE DISCHARGE.--17 years, 3,932 ft³/s, 67.93 in/yr, 2,849,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,700 ft³/s Dec. 3, 1975, gage height, 21.97 ft; minimum, 718 ft³/s Nov. 5, 1974, gage height, 3.03 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	1300	27,200	18.18	July 15	0800	16,900	14.26
Jan. 11	0600	*34,200	*19.75				

Minimum discharge, 1,060 ft³/s Oct. 6, gage height, 3.11 ft and gage height, 3.14 ft Sept. 30.

REVISIONS.--The maximum discharges for the water years 1971 and 1976 have been revised to 38,100 ft³/s Jan. 31, 1971, gage height, 20.35 ft, and 52,700 ft³/s Dec. 3, 1975, gage height, 21.97 ft, superceding figures published in reports for 1971 and 1976.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1160	3580	3630	1820	3170	3830	3660	2930	5050	3160	3200	2290
2	1130	2840	3430	1800	2990	3720	4060	2900	4550	4140	2960	5970
3	1280	2370	8920	2270	2850	3590	3990	2950	4260	4390	2710	3320
4	1180	2800	23400	2770	2730	3500	3560	2910	3890	3180	2490	2710
5	1100	4170	11600	8060	2640	3300	3290	2890	3550	3170	2420	2220
6	1080	4340	7100	8330	2570	3250	3130	2930	3370	3140	2380	1910
7	2570	3730	5450	5890	2670	3260	2980	3010	3570	2810	2320	1920
8	2460	3010	4560	17300	2570	3800	2830	3200	4110	2530	2510	1730
9	1770	2620	3990	12400	2600	7800	2680	2910	4000	2380	2720	1770
10	1650	2310	3480	19900	2640	7270	2770	2750	7000	2220	2730	1870
11	1650	2080	3100	27900	3010	6600	2670	2580	5000	2510	2820	4530
12	1510	1910	3180	13100	5230	5050	2550	2600	4000	10500	2520	2910
13	1350	1820	4400	8620	7270	4650	2420	2690	3500	11600	2290	2300
14	1350	1690	3540	6790	5720	5050	2320	3000	4000	15500	2280	2010
15	1370	1610	3720	5690	4560	4590	2270	3230	4500	14500	2200	1810
16	1290	2080	6630	5030	4830	4050	2280	3040	4000	8470	1980	1690
17	1950	3010	6420	4560	4940	3660	2320	2800	6000	6290	1850	1700
18	1710	3470	5320	4370	5470	3400	2400	2950	7000	5380	1800	1640
19	1390	3160	4700	4610	4490	3200	2600	3300	5000	4870	1750	1510
20	1270	2920	4050	4390	4420	3020	2830	3160	4000	4570	1700	1370
21	1220	2580	3740	3950	4290	2880	3140	3640	3500	4870	1650	1310
22	5330	2150	3840	3630	4500	2820	3010	3860	3300	4200	1650	1310
23	6680	1910	3620	3500	6560	2850	2780	4140	3500	4080	1650	1330
24	4030	1770	3120	3480	8680	2750	3170	4500	3700	4020	1630	1280
25	3460	1650	2840	3570	7230	2610	3380	4820	3590	3650	1560	1250
26	3320	1610	2800	3760	5430	2510	3130	4670	3410	3270	1490	1270
27	6860	2190	2510	5090	4620	2490	2900	4630	3390	2970	1490	1430
28	5270	4220	2310	5000	4110	2600	2710	4950	3370	3420	1590	1220
29	4640	5090	2160	4020	---	2910	2730	5970	3290	3070	1980	1130
30	3390	4070	2010	3620	---	4320	2800	6670	3410	2820	2030	1080
31	2850	---	1910	3390	---	3950	---	6030	---	2960	2020	---
TOTAL	77270	82760	151480	208610	122790	119280	87360	112610	124810	154640	66370	59790
MEAN	2493	2759	4886	6729	4385	3848	2912	3633	4160	4988	2141	1993
MAX	6860	5090	23400	27900	8680	7800	4060	6670	7000	15500	3200	5970
MIN	1080	1610	1910	1800	2570	2490	2270	2580	3290	2220	1490	1080
CFSM	3.17	3.51	6.22	8.56	5.58	4.90	3.70	4.62	5.29	6.35	2.72	2.54
IN.	3.66	3.92	7.17	9.87	5.81	5.65	4.13	5.33	5.91	7.32	3.14	2.83
AC-FT	153300	164200	300500	413800	243600	236600	173300	223400	247600	306700	131600	118600

CAL YR 1982 TOTAL 1472070 MEAN 4033 MAX 26100 MIN 1080 CFSM 5.13 IN. 69.67 AC-FT 2920000
WTR YR 1983 TOTAL 1367770 MEAN 3747 MAX 27900 MIN 1080 CFSM 4.77 IN. 64.73 AC-FT 2713000

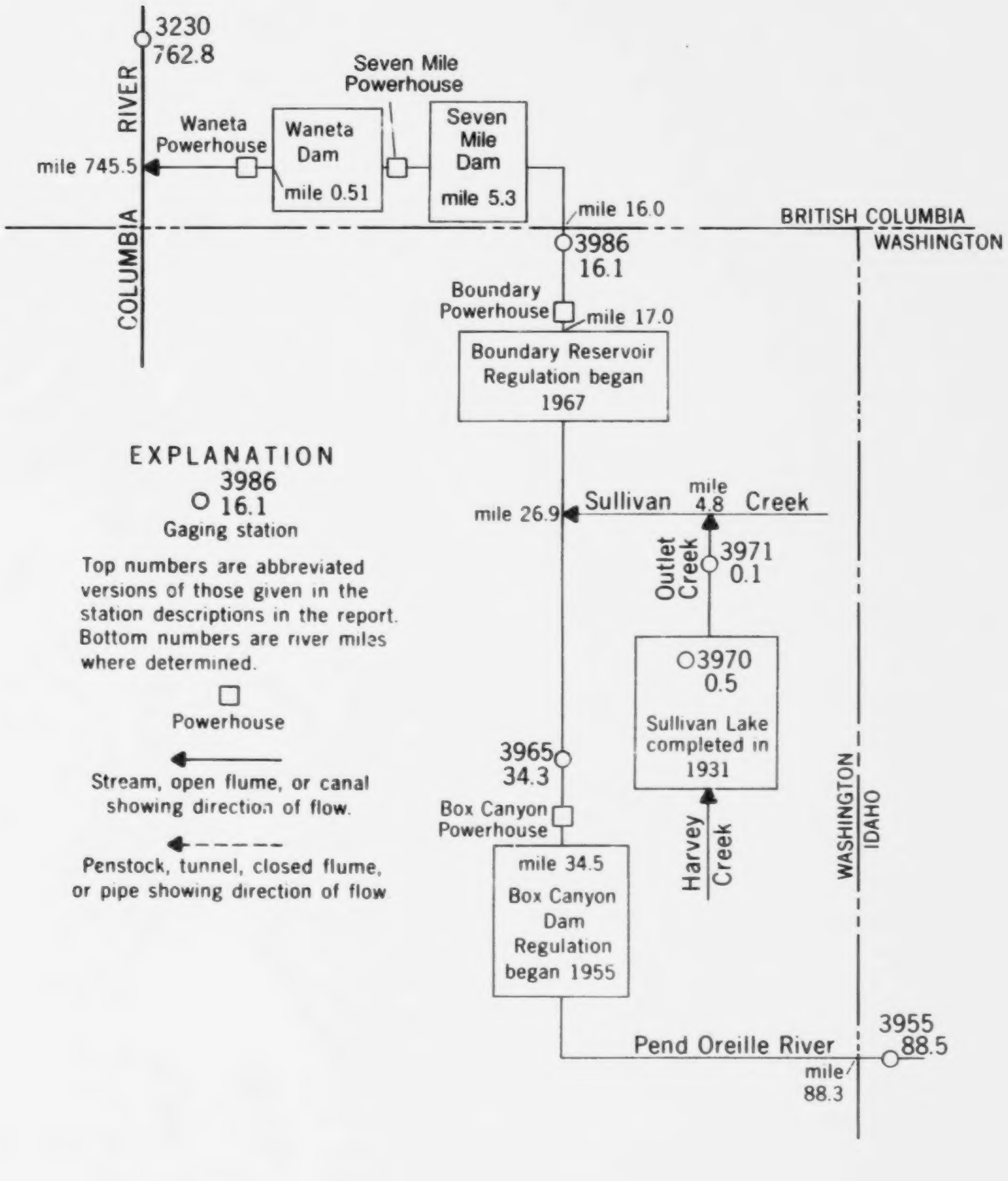
3230
762.8
COLUMBIA RIVER
Seven Mile Powerhouse
Waneta Powerhouse
Waneta Dam
mile 0.51
Seven Mile Dam
mile 5.3
mile 745.5
mile 16.0
BRITISH COLUMBIA
WASHINGTON
3986
16.1
Boundary Powerhouse
mile 17.0
Boundary Reservoir Regulation began 1967
EXPLANATION
3986
16.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow
mile 26.9
Sullivan Creek
mile 4.8
Outlet Creek
3971
0.1
3970
0.5
Sullivan Lake completed in 1931
Harvey Creek
3965
34.3
Box Canyon Powerhouse
mile 34.5
Box Canyon Dam Regulation began 1955
WASHINGTON
IDAHO
Pend Oreille River
3955
88.5
mile 88.3

Figure 19.—Gaging stations in Pend Oreille River basin and Columbia River above international boundary.

12323000 COLUMBIA RIVER AT BIRCHBANK, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°10'40", long 117°42'59", on right bank at Birchbank, British Columbia, 0.7 mi downstream from Sullivan Creek, 7 mi upstream from Trail, 11.7 mi downstream from Kootenay River, 17.4 mi upstream from international boundary, and at mile 762.4.

DRAINAGE AREA.--34,000 mi², approximately.

PERIOD OF RECORD.--April 1913 to current year. Published as "at Trail, British Columbia" 1913-37.

REVISED RECORDS.--WSP 982: 1942. WSP 1216: 1949.

GAGE.--Water-stage recorder. Datum of gage is 1,329.90 ft National Geodetic Vertical Datum of 1929, 1947 international joint adjustment, published as 1,338.00 ft prior to October 1948. Prior to Oct. 1, 1937, nonrecording gage on highway bridge at site 6.8 mi downstream at datum 16.27 ft lower.

REMARKS.--Records excellent. Flow regulated by six major reservoirs, and by numerous small reservoirs and powerplants. Diversions above station for irrigation of about 25,000 acres.

COOPERATION.--This station is maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--70 years, 71,240 ft³/s, 51,610,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 377,000 ft³/s June 9, 1961, gage height, 50.05 ft; maximum gage height, 50.62 ft June 11, 1948; minimum discharge observed, 8,940 ft³/s Feb. 3, 1937, gage height, 6.27 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 137,000 ft³/s Aug. 3, gage height, 26.31 ft; minimum daily, 23,000 ft³/s Apr. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33300	51900	78700	44100	91800	85800	72000	72400	95700	54400	122000	66400
2	41000	53000	81600	50500	91500	85800	71700	73400	96000	47700	123000	67400
3	50100	56100	77700	67100	89300	86200	71300	73800	96400	48700	133000	74900
4	49400	58300	81900	88300	86500	82600	70600	74200	94300	48000	132000	74900
5	49100	52300	81900	104000	85800	67100	65300	75600	91800	44500	125000	75200
6	48700	55800	81600	108000	84700	58600	51200	75900	90000	46300	116000	76300
7	47700	53300	81900	110000	84000	58600	29000	77700	87600	47700	116000	68100
8	44100	48000	81600	113000	86100	58300	23000	78000	86900	44500	112000	56500
9	44100	45500	81600	109000	86500	56100	47000	78000	87900	39500	104000	60000
10	42400	59300	81600	108000	84700	50800	60000	78700	83300	39900	103000	52300
11	40600	60000	81900	110000	82600	47700	72700	77300	81200	39500	103000	53000
12	41000	51900	74200	106000	83000	47000	77000	78700	77700	45500	111000	50500
13	40600	43400	65000	106000	88600	45900	77000	72700	75200	54700	122000	44500
14	40600	44500	63900	106000	96700	45200	77000	70600	71700	75200	120000	47000
15	42000	49100	63200	104000	98200	50500	77000	74200	68500	91500	118000	49100
16	48400	48000	63900	96700	98900	65700	76600	82300	73400	107000	114000	53000
17	52600	44800	57200	90700	100000	64600	71300	80200	85100	108000	106000	53000
18	59300	52600	51900	89700	104000	69200	57200	82600	96400	102000	90000	53000
19	58300	55800	49800	88600	97800	80900	50500	81600	94300	103000	78400	49800
20	59700	55800	51200	87600	84400	80900	50500	82300	92500	118000	74200	54400
21	59700	52300	54000	87600	74500	83700	51900	77000	92200	105000	73800	53300
22	60400	55100	54000	83000	73400	93600	52600	75200	96700	107000	74500	51600
23	67400	57600	47300	80500	73800	94300	54000	91800	95700	115000	73400	43100
24	69600	62500	40300	83000	73800	97100	61800	102000	93600	121000	71300	39500
25	69900	63200	40300	84400	73400	102000	68500	107000	85800	127000	72400	39500
26	68900	63900	41700	81900	73100	99600	69600	107000	83700	128000	74500	39500
27	73100	52300	42400	83300	79800	101000	69200	99900	86500	124000	77000	42700
28	73800	60700	43800	85100	86500	101000	69200	92900	94300	133000	73800	41000
29	69900	79400	44100	84700	---	99900	70300	97500	91100	130000	74900	39900
30	67100	80200	51200	87900	---	97100	69600	100000	74200	125000	74200	39500
31	59300	---	55100	91100	---	80900	---	96000	---	123000	66700	---
TOTAL	1672100	1666600	1946500	2819800	2413400	2337700	1884600	2586500	2619700	2643600	3029100	1608900
MEAN	53940	55550	62790	90960	86190	75410	62820	83440	87320	85280	97710	53630
MAX	73800	80200	81900	113000	104000	102000	77000	107000	96700	133000	133000	76300
MIN	33300	43400	40300	44100	73100	45200	23000	70600	68500	39500	66700	39500
AC-FT	3317000	3306000	3861000	5593000	4787000	4637000	3738000	5130000	5196000	5244000	6008000	3191000

CAL YR 1982 TOTAL 29302100 MEAN 80280 MAX 159000 MIN 33300 AC-FT 58120000
WTR YR 1983 TOTAL 27228500 MEAN 74600 MAX 133000 MIN 23000 AC-FT 54010000

12395500 PEND OREILLE RIVER AT NEWPORT, WA

LOCATION.--Lat 48°10'56", long 117°02'00", in SE¼SE¼SW¼ sec.24, T.56 N., R.6 W. (Boise meridian), Bonner County, ID, Hydrologic Unit 17010216, on left bank at Newport, 0.2 mi upstream from bridge on U.S. Highway 2, 0.2 mi east of Idaho-Washington state line, 1.6 mi downstream from Albeni Falls Dam, and at mile 88.5.

DRAINAGE AREA.--24,200 mi², approximately.

PERIOD OF RECORD.--June 1903 to September 1941, October 1952 to current year. Prior to October 1921, published as "Clark Fork at Newport, WA.," October 1921 to September 1937, as "Clark Fork at Priest River, ID.," and October 1937 to September 1941, as "Pend Oreille River at Priest River, ID."

REVISED RECORDS.--WSP 532: 1903-11.

GAGE.--Water-stage recorder. Datum of gage is 1,999.7 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 22, 1928, nonrecording gages at Priest River, Newport or Metaline Falls at various datums (see description, WSP 532, p. 92). Sept. 22, 1928, to Sept. 30, 1935, at datum 2,040.14 ft National Geodetic Vertical Datum, and Oct. 1, 1935, to Sept. 30, 1941, at datum 2,000 ft National Geodetic Vertical Datum, water-stage recorder at Priest River. Since December 1952, auxiliary water-stage recorder 2.74 mi downstream from base gage.

REMARKS.--Records good. Flow regulated at Albeni Falls Dam and affected by storage in Pend Oreille Lake (see sta 12392500), Flathead Lake, Hungry Horse Reservoir, and several smaller reservoirs. Diversions above station for irrigation of about 354,000 acres.

AVERAGE DISCHARGE.--6[illegible] years (1904-41, 1953-83), 26,040 ft³/s, 18,870,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136,000 ft³/s June 15, 1913, June 21, 1933, June 12, 1972; minimum, 1,280 ft³/s Sept. 1, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1894 reached a stage of about 64.0 ft present site and datum, discharge, about 200,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 71,300 ft³/s May 31; gage height, 43.80 ft; minimum discharge, 2,480 ft³/s Jan. 18; gage height, 30.41 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15100	18500	15600	14800	17500	28200	21400	31600	65200	47300	18900	11300
2	15200	23600	15500	15400	18900	29000	21700	34200	59900	50300	14400	11200
3	16500	23700	15300	15500	21200	29900	21700	36600	54700	50600	15500	11000
4	18800	23700	16900	15500	21800	29800	21700	36600	51700	47200	16400	11100
5	18700	23600	18400	17100	21600	30100	21800	36500	49300	43400	16400	13100
6	18600	23300	18600	19000	20100	30100	22700	36600	47100	45400	16300	14000
7	18600	23200	17100	16200	22100	30300	24000	36600	47300	46500	16400	14200
8	16400	23400	15700	18700	25000	30200	24200	36900	49000	50500	17400	13000
9	15400	25400	15700	8330	26600	30800	23700	34600	52700	50500	16900	14700
10	15300	27700	14800	7060	28300	30900	23800	34600	55200	44100	14500	17300
11	15300	27500	14100	6900	28100	30400	27700	34600	56800	34500	13500	17400
12	15200	27900	14000	6640	28500	30300	27100	31900	56600	24500	13900	19200
13	15300	27600	13400	4040	28500	30500	25000	34800	56400	24400	14200	22500
14	15300	27400	12400	3850	28800	31900	19800	36800	54700	36400	15600	22400
15	16700	27800	12100	3950	28200	34800	18800	36600	49200	45500	16700	22900
16	17500	2[illegible]00	14200	4050	25000	35700	20200	36700	41400	44500	16600	22600
17	17400	28000	18000	3860	23100	35800	20100	36600	36600	47400	16600	22600
18	17500	27500	18000	4060	21100	36000	20400	36600	36500	51500	13700	22900
19	19500	24900	15100	4030	24900	35900	20100	36500	37300	46600	11200	22600
20	20600	14500	13300	9260	24900	36000	20700	33900	41800	36600	11400	22400
21	20600	12700	14600	16600	24900	35700	21400	31600	42400	29200	13400	22700
22	20700	12700	16600	20000	24800	33900	25200	31800	39300	23600	10300	21100
23	20400	12800	16100	19200	25100	28600	29100	34500	38200	25000	8730	17900
24	20600	12600	6840	19100	25100	24200	29900	42600	38300	27900	11200	17100
25	20300	13700	6810	21200	25000	22200	34600	49700	38000	29800	13300	17200
26	20300	14100	7330	23600	25100	23700	40800	54400	31800	33000	13000	16900
27	17200	14000	12900	23100	24900	25300	41100	60800	26000	27600	13100	16900
28	13300	15200	13000	21100	26500	25300	37000	66400	30200	25300	15000	19900
29	13200	15300	12400	20300	---	22600	31600	67300	35900	23400	13700	22600
30	13300	15500	12400	19700	---	21500	32000	69700	41900	23500	11000	22900
31	13300	---	13100	19100	---	21400	---	69600	---	23500	11500	---
TOTAL	534100	635700	440280	421230	685600	921000	769300	1288200	1361400	1159500	440730	543600
MEAN	17230	21190	14200	13590	24490	29710	25640	41550	45380	37400	14220	18120
MAX	20700	28000	18600	23600	28800	36000	41100	69700	65200	51500	18900	22900
MIN	13200	12600	6810	3850	17500	21400	18800	31600	26000	23400	8730	11000
AC-FT	1059000	1261000	873300	835500	1360000	1827000	1526000	2555000	2700000	2300000	874200	1078000

CAL YR 1982 TOTAL 10994440 MEAN 30120 MAX 100000 MIN 4120 AC-FT 21810000
WTR YR 1983 TOTAL 9200640 MEAN 25210 MAX 69700 MIN 3850 AC-FT 18250000

NOTE.--No gage-height record Oct. 1-25, Apr. 21 to June 7.

12396500 PEND OREILLE RIVER BELOW BOX CANYON, NEAR IONE, WA

LOCATION.--Lat 48°46'52", long 117°24'55", in SE¼NE¼ sec.19 T.38 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 1,000 ft downstream from Box Canyon Dam, 2.8 mi north of Ione, and at mile 34.3.

DRAINAGE AREA.--24,900 mi², approximately.

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 1933: Drainage area. WDR-WA-81-2: 1976.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 29, 1954, nonrecording gage at site 300 ft upstream at same datum. Mar. 29 to Aug. 25, 1954, nonrecording gage at present site and datum. Since Aug. 20, 1967, auxiliary water-stage recorder 1.2 mi downstream at same datum.

REMARKS.--Records good except those less than 10,000 ft³/s, which are fair. Discharge for Jan.17-20 provided by N.P.D. Reservoir Control Center. Flow completely regulated by Box Canyon Reservoir, 1,000 ft upstream since June 1955 and by Pend Oreille Lake, Flathead Lake, Hungry Horse Reservoir, and by several smaller reservoirs and powerplants. Numerous diversions above station for irrigation.

AVERAGE DISCHARGE.--31 years, 28,090 ft³/s, 20,350,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136,000 ft³/s June 13, 14, 1972; maximum elevation, 2,014.54 ft June 14, 1972; minimum observed discharge, 125 ft³/s Apr. 23, 1967 (result of regulation).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1948 reached an elevation of 2,018.00 ft, from floodmarks, discharge, 167,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 84,000 ft³/s May 31; maximum elevation, 2,003.53 ft May 31; minimum daily, 4,700 ft³/s Jan. 18, 19; minimum elevation, 1,983.98 ft Jan. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16900	15400	15500	12800	19100	29400	23100	33200	69800	43200	21600	11100
2	15700	21700	16600	15100	18200	28700	22400	33100	64600	48900	16100	11200
3	16500	23900	17000	16200	20800	28800	22900	35400	59000	49100	16500	10600
4	17500	24200	16600	16300	21600	30500	22700	37000	54000	48900	16100	10200
5	20000	24200	18300	16100	22600	31000	22600	37700	50700	45700	16000	10700
6	19300	24200	19000	18800	21900	31100	23200	37600	47700	44000	16300	13000
7	19500	24400	19400	23300	21200	32100	24100	37600	47300	45000	16200	14000
8	19300	24600	17100	18200	23800	31600	26000	37600	48400	45600	16500	13500
9	18400	26000	16300	9570	25200	31400	25200	37500	50300	52500	17500	13400
10	16000	26800	15600	8120	27700	32700	25100	34400	52100	47100	16300	15200
11	15900	27500	14400	7880	27400	33000	24900	33600	54400	39500	14100	17100
12	15500	27900	14100	7620	28000	32200	26800	33200	55700	29800	12700	17700
13	15600	28400	13700	6140	28400	32400	27200	33400	56800	27200	14000	20800
14	15600	28400	13100	5030	28400	32900	24500	36400	55500	30000	14200	22200
15	15900	28500	12400	5810	28400	34100	20400	37500	52600	40900	16100	22900
16	17600	28600	11900	5750	28000	35800	20700	38000	46400	44500	16500	23000
17	18300	28600	15200	4900	25300	36300	21000	38600	40100	44300	16100	22500
18	17600	28600	20500	4700	22200	36700	21600	38100	35900	49300	15800	22800
19	18500	28500	17900	4700	24300	36600	21500	38100	36400	49800	11500	23400
20	20900	23300	15600	4940	25300	36600	21700	37800	38400	42200	11100	22900
21	21200	14900	15800	12600	25800	36400	23000	33700	42300	32300	12500	22400
22	21400	13300	17700	20000	26000	35100	24200	32800	41100	28800	11500	23000
23	21700	14300	17800	20500	25700	32300	28000	33900	39400	26300	8970	19000
24	21300	13200	12500	19900	26000	28600	30500	36900	37700	27700	9090	17300
25	21100	13000	8040	20500	26200	27000	32900	47700	38200	28200	12800	17900
26	21300	13800	7620	23800	26600	24600	39700	53000	35900	33400	12700	18900
27	20900	14300	10200	24100	28400	25800	42000	58400	29000	28200	12300	18200
28	15600	15800	12500	23800	27200	26400	41700	64900	29500	28300	13200	17400
29	14100	16700	12900	22600	---	26000	35200	65900	32000	25100	15600	19200
30	13700	14400	13100	21000	---	23700	33500	69000	37400	24100	11700	22100
31	14000	---	12800	20700	---	23200	---	73100	---	23900	10800	---
TOTAL	556800	657400	461160	441460	699700	963000	798300	1295100	1378600	1173800	442360	533600
MEAN	17960	21910	14880	14240	24990	31060	26610	41780	45950	37860	14270	17790
MAX	21700	28600	20500	24100	28400	36700	42000	73100	69800	52500	21600	23400
MIN	13700	13000	7620	4700	18200	23200	20400	32800	29000	23900	8970	10200
AC-FT	1104000	1304000	914700	875600	1388000	1910000	1583000	2569000	2734000	2328000	877400	1058000

CAL YR 1982 TOTAL 11147420 MEAN 30540 MAX 97200 MIN 5220 AC-FT 22111000
WTR YR 1983 TOTAL 9401280 MEAN 25760 MAX 73100 MIN 4700 AC-FT 18647000

12397000 SULLIVAN LAKE NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'21", long 117°17'15", in SW¼NE¼ sec.31, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, 200 ft south of dam at outlet, and 4.0 mi southeast of Metaline Falls.

DRAINAGE AREA.--51.2 mi².

PERIOD OF RECORD.--May 1912 to September 1923, January 1959 to current year (fragmentary).

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pend Oreille County Public Utility District). Prior to Sept. 30, 1923, nonrecording gage on dam at outlet of lake at different datum.

REMARKS.--Lake elevation is controlled by concrete dam. Top of gates is at 2,588.7 ft, bottom of gates is at 2,584.7 ft. Bottom of sluiceway is at 2,564 ft. Some small diversions for domestic use.

COOPERATION.--Elevation record furnished by Public Utility District No. 1 of Pend Oreille County.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 2,589.94 ft July 15, 1975; minimum observed, 2,564.00 ft on many days during period Jan. 6 to Mar. 25, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,588.78 ft July 26; minimum observed, 2,564.80 ft Feb. 7, 11.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2588.46	2576.42	2566.38	---	---	---	2565.80	2572.64	2587.80	2587.98	2588.10	2588.42
2	---	2576.04	2566.18	---	---	---	---	2573.00	2587.80	2588.10	2588.10	2588.40
3	2588.46	2575.60	---	2564.84	---	---	---	---	2587.78	2538.28	2588.10	2588.40
4	2588.46	2575.16	2566.00	---	2564.82	---	2565.76	2573.80	2587.78	2588.30	---	2588.38
5	2587.98	2574.76	2565.98	---	---	---	---	2574.20	2587.70	2588.38	2588.06	2588.38
6	2587.50	2574.42	---	2564.86	---	---	2565.88	2574.68	2587.60	2588.36	2588.08	2588.36
7	2587.02	2574.00	2565.76	---	2564.80	2565.44	2566.06	2575.20	2587.90	2588.36	2588.08	2588.32
8	2586.56	2573.60	---	---	---	---	2566.18	2575.86	2588.00	2588.36	2588.08	2588.36
9	2586.10	2573.26	2565.56	---	---	2565.56	2566.34	2576.30	2588.10	---	2588.10	2588.32
10	2585.58	---	2565.48	2564.98	---	---	2566.50	---	2587.96	2588.30	2588.16	2588.28
11	2585.10	2572.48	---	---	2564.80	2566.06	2566.56	2577.06	2587.96	2588.22	2588.20	2588.34
12	---	2572.14	---	2564.98	---	---	2566.68	2577.40	2587.80	2588.19	2588.20	2588.34
13	2584.24	2571.86	---	---	---	---	2566.80	2577.80	2587.70	2588.20	2588.20	2588.36
14	2583.80	2571.44	2565.30	2564.94	2564.86	2566.36	2566.92	2578.34	2587.56	2588.28	2588.20	2588.36
15	2583.38	2571.10	2565.28	---	---	---	2567.02	2578.68	2587.68	2588.32	2588.20	---
16	2582.98	2570.80	---	---	---	2566.38	---	2579.18	2587.88	2588.36	2588.22	2588.10
17	2582.50	2570.58	2565.32	2564.90	---	---	2567.28	2579.50	2587.94	2588.28	2588.20	2587.86
18	2582.09	2570.24	---	---	2564.92	2566.32	2567.38	2580.06	2588.00	2588.20	2588.20	2587.68
19	2581.66	2569.90	2565.22	---	---	---	---	2580.52	2588.00	2588.16	2588.20	---
20	2581.22	---	---	2564.88	---	---	2567.72	2581.02	2588.00	2588.26	---	---
21	2580.80	2569.24	---	---	---	2566.18	2567.94	---	2587.88	2588.40	2588.20	---
22	2580.46	2568.84	2565.14	---	2564.96	---	2568.24	---	2587.76	2588.48	2588.20	2587.56
23	2580.08	2568.48	---	---	---	2566.08	2568.58	2583.02	---	2588.54	2588.20	2587.36
24	2579.70	2568.10	---	2564.84	2565.00	2566.06	2569.10	2584.06	2587.90	2588.58	2588.36	2587.10
25	2579.36	2567.80	---	---	---	2566.02	2569.86	2584.96	2587.86	2588.68	2588.44	2586.88
26	2579.00	2567.48	2564.98	---	---	---	2570.48	2586.00	2587.86	2588.78	2588.46	2586.70
27	2578.68	2567.28	---	---	---	---	2570.92	2586.70	2587.74	2588.68	2588.50	2586.42
28	2578.18	2567.04	2564.96	2564.86	2565.12	---	2571.46	2587.10	2587.70	2588.16	2588.50	2586.20
29	2577.80	2566.83	---	---	---	2565.88	2571.84	2587.50	2587.80	2588.08	2588.48	2586.18
30	2577.40	2566.56	2564.88	---	---	---	2572.18	2587.66	2587.90	2588.08	2588.46	2586.18
31	2576.94	---	---	2564.88	---	---	---	2587.86	---	2588.08	2588.44	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

12397100 OUTLET CREEK NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'42", long 117°17'12", in SW¼SE¼ sec.30, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, on right bank 0.1 mi upstream from mouth, 0.4 mi downstream from Sullivan Lake Dam, and 4 mi east of Metaline Falls.

DRAINAGE AREA.--51.5 mi².

PERIOD OF RECORD.--January 1959 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,540.2 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for May 31 to July 12, which are fair. Flow completely regulated by Sullivan Lake 0.4 mi upstream (see sta 12397000). No diversions.

AVERAGE DISCHARGE.--24 years, 76.1 ft³/s, 55,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 924 ft³/s May 31, 1969, gage height, 12.26 ft; minimum, 1.6 ft³/s part of each day Apr. 9-12, 1973; minimum gage height, 8.76 ft part of each day Apr. 9-12, 1973, and Mar. 4-10, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 656 ft³/s May 31, gage height, 11.59 ft; minimum, 3.2 ft³/s Apr. 23, gage height, 8.84 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	310	135	42	42	56	99	5.0	627	174	51	30
2	24	303	120	42	42	59	97	5.2	627	179	51	29
3	24	296	112	41	41	62	92	5.4	584	180	43	28
4	220	289	107	41	40	65	83	5.7	540	178	35	28
5	350	282	99	40	39	69	47	6.0	526	173	29	27
6	346	275	92	40	38	72	3.5	6.3	370	163	21	27
7	342	269	85	40	38	77	3.4	6.6	276	160	21	24
8	335	263	82	42	38	78	3.4	7.0	348	156	21	22
9	331	256	74	43	38	83	3.4	7.0	432	151	21	22
10	328	250	71	46	38	103	3.4	7.5	496	142	21	22
11	320	244	66	46	38	120	3.4	7.7	499	138	21	22
12	317	238	62	46	39	135	3.4	8.2	477	137	21	22
13	310	230	60	45	41	144	3.4	8.6	446	137	21	22
14	306	224	59	44	42	150	3.4	9.0	304	138	21	22
15	303	219	58	44	42	155	3.4	9.5	221	144	21	91
16	296	213	56	44	42	153	3.4	9.8	236	141	21	162
17	292	208	55	44	43	150	3.4	10	244	140	21	133
18	289	241	53	43	44	146	3.4	10	249	137	21	128
19	286	256	53	42	44	144	3.4	11	254	84	21	59
20	279	244	51	42	45	137	3.4	11	266	28	21	21
21	275	235	51	41	46	133	3.4	12	276	27	21	21
22	269	224	49	41	46	131	3.4	12	266	26	21	83
23	269	213	46	41	47	126	3.5	13	276	26	21	178
24	263	203	45	40	47	122	3.8	14	286	28	26	179
25	260	190	45	39	49	118	3.9	20	289	32	31	165
26	256	179	45	39	51	114	4.0	73	282	162	41	149
27	279	167	44	41	52	110	4.2	238	276	294	43	167
28	324	157	44	42	55	108	4.4	448	226	199	43	102
29	335	162	43	42	---	105	4.6	552	169	90	42	20
30	324	157	43	42	---	105	4.8	624	172	51	42	19
31	317	---	43	42	---	103	---	647	---	51	36	---
TOTAL	8493	6997	2048	1307	1207	3433	509.1	2809.5	10540	3866	891	2024
MEAN	274	233	66.1	42.2	43.1	111	17.0	90.6	351	125	28.7	67.5
MAX	350	310	135	46	55	155	99	647	627	294	51	179
MIN	24	157	43	39	38	56	3.4	5.0	169	26	21	19
AC-FT	16850	13880	4060	2590	2390	6810	1010	5570	20910	7670	1770	4010

CAL YR 1982 TOTAL 33469.1 MEAN 91.7 MAX 500 MIN 3.9 AC-FT 66390
WTR YR 1983 TOTAL 44124.6 MEAN 121 MAX 647 MIN 3.4 AC-FT 87520

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 48°59'56", long 117°21'09", in SW¼NE¼ sec.3, T.40 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 0.1 mi upstream from international boundary, 0.9 mi downstream from Boundary Dam, 6.0 mi downstream from Slate Creek, 9.7 mi north of Metaline Falls, and at mile 16.1.

DRAINAGE AREA.--25,200 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1908 to September 1910 (gage heights only), October 1912 to current year. Prior to October 1928, published as "Clark Fork at Metaline Falls," October 1928 to September 1937 as "Clark Fork below Z Canyon, near Metaline Falls," and October 1938 to September 1964 as "below Z Canyon, near Metaline Falls." Concurrent records published for present site December 1962 to September 1964.

REVISED RECORDS.--WSP 442: 1913. WSP 1716: 1919.

GAGE.--Water-stage recorder. Datum of gage is 1,700 ft city of Seattle Boundary Dam datum. Prior to Dec. 20, 1928, nonrecording gage at Metaline Falls at datum approximately 1,983.4 ft National Geodetic Vertical Datum of 1929. Dec. 20, 1928, to Sept. 30, 1964, water-stage recorder at site 1.3 mi upstream at datum 1,721.18 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Water-discharge records excellent except those for periods of no gage-height record (below 16.5 ft) which occurred on Nov. 1, 23, 24, 28-30, Dec. 1, 2, 4, 6, 9, 13-16, 28, Jan. 9-21, which are poor. Flow regulated by Boundary Reservoir 0.9 mi upstream beginning April 1967 and by Box Canyon Reservoir beginning June 1955, Pend Oreille Lake beginning June 1952, Flathead Lake beginning April 1938, Hungry horse Reservoir beginning September 1951, and by several smaller reservoirs and powerplants. In 1946 there were diversions for irrigation of 340,000 acres above the station and there probably has not been any appreciable change since that time.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--71 years, 27,350 ft³/s, 19,820,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 171,300 ft³/s June 13, 1948, gage height, 60.25 ft, site and datum then in use; minimum daily, 200 ft³/s Aug. 12, 1967, result of regulation; minimum observed, 109 ft³/s Apr. 23, 1967, result of regulation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1894 reached a stage of 69.0 ft, from floodmarks, at site and datum 1.3 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86,100 ft³/s May 31, gage height, 35.47 ft; minimum, less than 3,180 ft³/s on days having no gage-height record for part of day; minimum daily, 4,920 ft³/s Jan. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18100	14700	17000	13500	19700	32200	23300	35900	75000	45300	23800	13000
2	15600	22900	16600	14900	17000	30100	24300	35800	71500	52400	20200	10700
3	15700	22300	19000	17100	20100	29800	22300	37900	65300	51900	17200	10600
4	18300	25400	16500	17900	26300	32200	24500	40300	58700	53000	17900	10700
5	21700	25600	18600	19500	22800	33100	23100	40300	55500	48500	16400	11600
6	20400	27100	17900	22300	20400	32800	27100	40600	50800	46000	16700	13500
7	19200	22800	19000	26800	20800	35500	26700	40900	50500	47300	17200	14600
8	20200	25400	18000	15200	21200	33600	25200	40800	52000	48400	18400	13100
9	17400	27900	16900	8980	24100	33700	25600	40500	54200	56400	15800	16400
10	15700	30300	16400	7790	25900	35800	23900	37200	56200	50400	18600	15100
11	17000	29000	15600	7310	29000	36900	27600	36300	59500	40800	13400	17300
12	16800	29300	14900	8620	28900	34500	28900	35400	60200	33100	16700	18900
13	16200	28600	15400	6060	29500	35500	27500	35900	61600	30500	13200	21600
14	16700	29000	15700	6060	29900	35800	25600	38800	59700	30000	13900	21700
15	17100	31000	11600	4290	28300	37000	21900	41300	56100	42900	16600	22900
16	19000	30600	13900	4340	25300	39200	20100	40500	49700	45100	17000	23700
17	19600	29800	18800	5310	27300	39000	20700	41500	43200	48500	18200	24400
18	19300	30700	19600	5410	23900	39800	25000	41800	38400	50500	16100	23400
19	19400	29800	14800	5540	24900	39600	25600	40800	38300	55300	14200	24000
20	20600	26800	15500	6560	27000	39200	25300	41300	40200	43900	9800	23600
21	21600	14200	15800	15900	27700	39000	23300	36900	45100	34600	11000	23100
22	22000	16900	19200	19300	27100	36400	24900	36000	44800	32000	13000	22400
23	21700	15000	16900	19600	26700	33300	27800	36500	42900	26800	10200	20100
24	22300	14000	10900	20200	27200	30800	30400	40000	39900	26000	10500	16600
25	23100	14600	9080	23500	27300	29500	33900	50700	40800	28500	12400	16500
26	22200	13100	8120	25700	27400	29800	42800	57500	38200	35000	13600	19500
27	20300	17900	13100	26200	30100	26600	45200	63300	32100	31700	13700	19200
28	16700	14200	13200	21700	28800	25700	47100	70700	29400	28800	14700	20000
29	15000	17600	13400	21900	---	27800	38000	72600	32300	27200	15200	20200
30	15300	17300	13300	22300	---	25400	34900	74900	37500	25200	12700	22200
31	15700	---	13100	20000	---	23600	---	78400	---	24300	12200	---
TOTAL	579900	693800	478100	459770	714600	1033200	842500	1401300	1479600	1240300	470500	550600
MEAN	18710	23130	15420	14830	25520	33330	28080	45200	49320	40010	15180	18350
MAX	23100	31000	19600	26800	30100	39800	47100	78400	75000	56400	23800	24400
MIN	15000	13100	8120	4290	17000	23600	20100	35400	29400	24300	9800	10500
AC-FT	1150000	1376000	948300	912000	1417000	2049000	1671000	2779000	2935000	2460000	933200	1092000

CAL YR 1982 TOTAL 11795130 MEAN 32320 MAX 106000 MIN 4800 AC-FT 23396000
WTR YR 1983 TOTAL 9944170 MEAN 27240 MAX 78400 MIN 4290 AC-FT 19724000

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1974 to September 1981.
WATER TEMPERATURE: April 1974 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1982											
05...	0900	30900	154	7.9	8.0	1.0	10.1	--	<1	K4	76
JAN , 1983											
03...	1400	22300	163	8.2	1.5	1.0	12.4	94	<1	K4	79
JUN											
30...	1200	37000	140	8.2	17.0	1.4	9.7	108	K2	88	68
AUG											
10...	1300	20100	147	8.2	21.0	1.1	8.1	98	<1	K12	73

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV , 1982											
05...	0	21	5.7	2.7	7	.1	.80	77	8.0	.80	.10
JAN , 1983											
03...	1	22	5.9	3.1	8	.2	1.0	78	9.0	1.9	<.10
JUN											
30...	0	19	5.0	2.5	7	.1	.70	70	6.9	.60	<.10
AUG											
10...	0	20	5.5	2.5	7	.1	.70	74	7.0	.80	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1982											
05...	6.5	96	92	.13	8010	<.10	.060	.20	.010	<.010	.010
JAN , 1983											
03...	7.3	98	97	.13	5900	<.10	.090	.50	.040	.040	.010
JUN											
30...	6.4		83	.10	7390	<.10	.060	.40	.030	.020	.010
AUG											
10...	6.1	77	87	.10	4180	<.10	.070	.70	.040	.030	.010

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)
NOV , 1982											
05...	10	1	70	<.5	1	<1	<3	5	7	16	6
JAN , 1983											
03...	10	1	66	.6	1	<1	<3	6	16	13	8
JUN											
30...	20	1	60	<.5	1	<1	<3	2	20	13	5
AUG											
10...	<10	1	64	<.5	1	<1	<3	3	16	18	12

DATE	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDIMENT, SUS-PENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1982											
05...	2	.1	<10	<1	<1	<1	56	<6	11	6	501
JAN , 1983											
03...	6	.2	<10	2	<1	<1	58	<6	23	9	542
JUN											
30...	3	<.1	<10	1	<1	<1	48	<6	10	10	999
AUG											
10...	1	.1	<10	2	<1	<1	52	<6	6	3	163

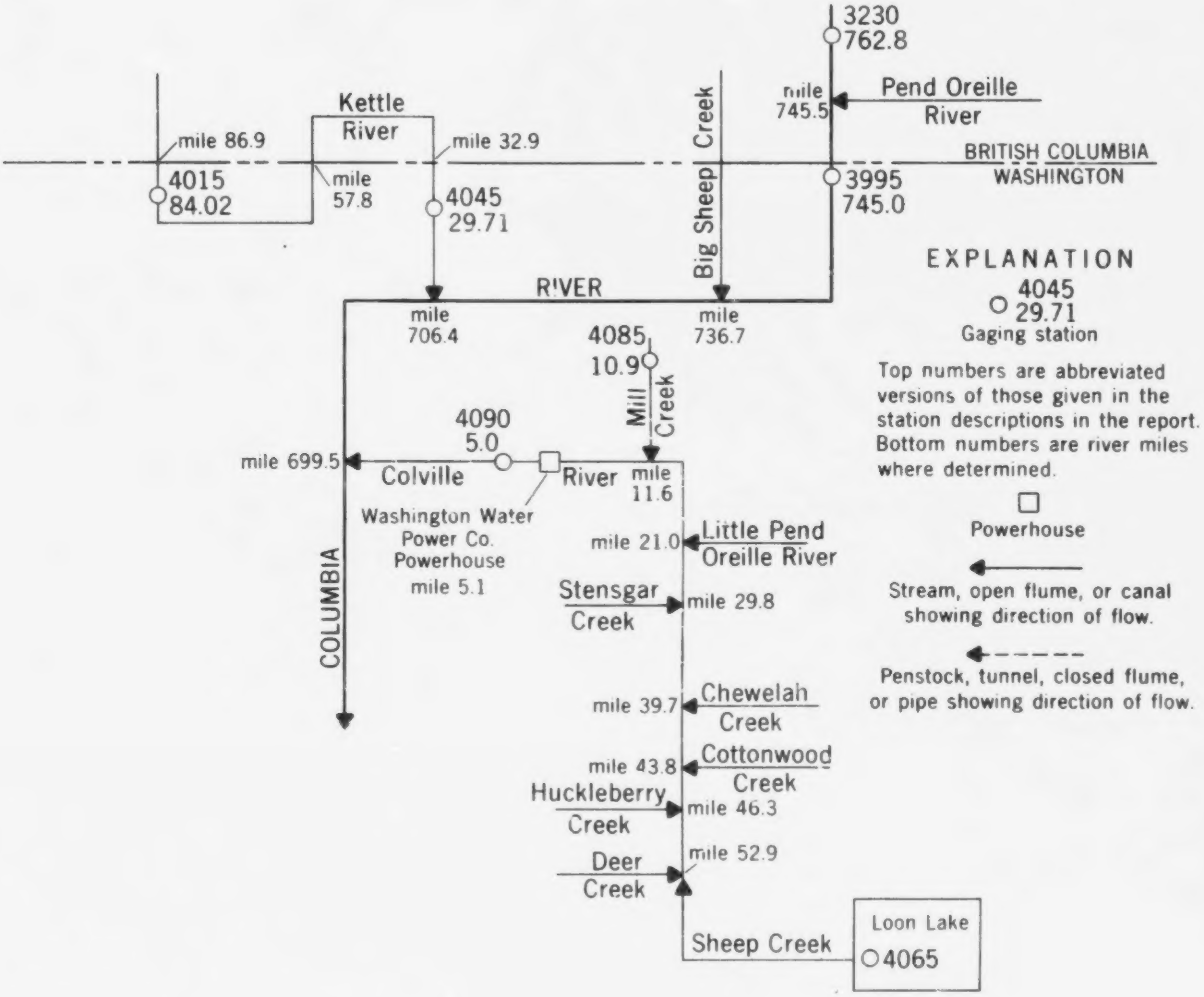
3230
762.8
mile
745.5
Pend Oreille
River
Kettle
River
mile 86.9
mile 32.9
Big Sheep Creek
BRITISH COLUMBIA
WASHINGTON
4015
84.02
mile
57.8
4045
29.71
3995
745.0
RIVER
mile
706.4
mile
736.7
4085
10.9
Mill Creek
4090
5.0
mile 699.5
Colville
River
mile
11.6
Washington Water
Power Co.
Powerhouse
mile 5.1
COLUMBIA
mile 21.0
Little Pend
Oreille River
Stensgar
Creek
mile 29.8
mile 39.7
Chewelah
Creek
mile 43.8
Cottonwood
Creek
Huckleberry
Creek
mile 46.3
Deer
Creek
mile 52.9
Sheep Creek
Loon Lake
4065
EXPLANATION
4045
29.71
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 20.—Gaging stations in Columbia River basin from international boundary to Colville River.

12399500 COLUMBIA RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 49°00'03", long 117°37'42", in NE¼SE¼ sec.4, T.40 N., R.41 E., Stevens County, Hydrologic Unit 17020001, on left bank at international boundary, 0.5 mi downstream from Pend Oreille River, and at mile 745.0.

DRAINAGE AREA.--59,700 mi², approximately.

PERIOD OF RECORD.--October 1937 to current year. Prior to March 1938, monthly discharge only, published in WSP 1316.

REVISED RECORDS.--WSP 932. 1937(m), 1938(M), 1939(m).

GAGE.--Water-stage recorder. Datum of gage is Bureau of Reclamation datum. Prior to Apr. 27, 1939, nonrecording gage at same site and datum. Since May 31, 1942, auxiliary water-stage recorder and Jan. 1 to May 30, 1942, auxiliary nonrecording gage 2.2 mi downstream from base gage at same datum.

REMARKS.--Records good. Flow regulated by eight major reservoirs and numerous smaller reservoirs and powerplants. It was estimated that 346,700 acres were under irrigation in the United States in 1946 with diversions for irrigation of an additional 35,000 acres in Canada.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--46 years, 100,600 ft³/s, 72,880,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 550,100 ft³/s June 12, 1948, elevation, 1,338.13 ft; minimum, 18,000 ft³/s Feb. 7, 1954, elevation, 1,289.38 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 1,346 ft, from information by Bureau of Reclamation, discharge, 680,000 ft³/s.

A discharge of about 12,900 ft³/s occurred Jan. 30 or 31, 1937, based on information from other gaging stations, elevation, 1,287.9 ft, from rating curve extended below 1,291.6 ft and may have been as low sometime in January 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 186,000 ft³/s July 26, elevation, 1,312.37 ft; minimum discharge, 32,600 ft³/s Apr. 8; minimum elevation, 1,292.77 ft Apr. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50200	68200	96000	57400	113000	118000	98400	110000	174000	104000	148000	77400
2	52200	77300	100000	64500	107000	118000	94300	113000	171000	102000	143000	81800
3	66500	77800	98600	83800	108000	118000	95900	114000	167000	103000	152000	86600
4	67900	83000	101000	103000	110000	116000	101000	117000	155000	101000	149000	87700
5	71000	77100	102000	124000	109000	104000	89600	118000	150000	95400	143000	87900
6	70500	82600	102000	129000	108000	94900	81600	120000	143000	92300	132000	91300
7	67500	79500	103000	140000	106000	96500	61700	121000	139000	94500	132000	86100
8	65200	76900	104000	131000	109000	96100	47100	123000	140000	95200	133000	72700
9	59800	69300	99900	118000	109000	93800	71000	121000	143000	93300	121000	73500
10	60100	87100	100000	116000	110000	91100	87700	119000	142000	93900	118000	72100
11	56300	88300	99900	118000	113000	90600	100000	115000	142000	79000	118000	66500
12	56200	83800	90700	115000	111000	85800	107000	116000	137000	105000	131000	71000
13	56300	69100	84100	110000	118000	84100	107000	112000	137000	88800	135000	68500
14	56500	72400	80500	112000	125000	84400	105000	110000	131000	106000	132000	67500
15	56700	69000	76500	109000	128000	87200	102000	118000	126000	131000	135000	71900
16	66200	81100	77900	103000	126000	107000	98800	124000	123000	156000	131000	76800
17	67100	73500	78000	97200	126000	105000	95200	124000	128000	158000	127000	77900
18	75100	77300	73900	95800	131000	110000	86200	126000	136000	157000	109000	77800
19	79100	85400	67300	95200	123000	120000	79300	125000	132000	157000	97800	75200
20	78800	83700	66900	95100	113000	122000	79000	126000	133000	171000	85300	81900
21	83300	69500	70000	103000	103000	120000	78600	119000	134000	142000	82600	77200
22	79600	68600	73100	104000	104000	129000	81800	116000	143000	142000	88300	76900
23	85900	73500	66800	101000	101000	131000	86500	130000	139000	145000	90100	65100
24	90500	76600	51500	103000	104000	130000	97900	147000	136000	144000	81800	56400
25	92800	79600	48400	106000	104000	134000	112000	161000	130000	155000	85600	53900
26	91100	78500	49100	107000	102000	127000	116000	170000	124000	167000	90400	60100
27	89200	68100	54600	108000	111000	128000	118000	169000	119000	158000	92300	62000
28	89900	71600	59200	107000	118000	130000	119000	168000	127000	161000	91900	61400
29	87700	96100	57800	107000	---	128000	110000	174000	126000	162000	91800	59500
30	86600	96300	63700	107000	---	127000	109000	180000	113000	152000	90900	59500
31	79600	---	72200	114000	---	109000	---	179000	---	147000	77600	---
TOTAL	2236400	2340800	2468600	3284000	3150000	3435500	2816600	4085000	4140000	3958400	3535400	2184100
MEAN	72140	78030	79630	105900	112500	110800	93890	131800	138000	127700	114000	72800
MAX	92800	96300	104000	140000	131000	134000	119000	180000	174000	171000	152000	91300
MIN	50200	68100	48400	57400	101000	84100	47100	110000	113000	79000	77600	53900
AC-FT	4436000	4643000	4896000	6514000	6248000	6814000	5587000	8103000	8212000	7851000	7012000	4332000

CAL YR 1982 TOTAL 41294300 MEAN 113100 MAX 220000 MIN 48300 AC-FT 81906992
WTR YR 1983 TOTAL 37634800 MEAN 103100 MAX 180000 MIN 47100 AC-FT 74648992

12400520 COLUMBIA RIVER AT NORTHPORT, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°55'21", long 117°46'32", in SW¼SW¼ sec.33, T.40 N., R.40 E., Stevens County, Hydrologic Unit 17020001, at State Highway 25 bridge at Northport, 9.9 mi downstream from gaging station at international boundary, and at mile 735.1.

DRAINAGE AREA.--60,200 mi^2, approximately.

PERIOD OF RECORD.--Water years 1910-11, 1952 to current year. Prior to November 1951 published as "at Northport." November 1951 to September 1957 published as 12399500 "at international boundary," October 1957 to September 1963 as "at Northport," October 1963 to September 1973 as "at international boundary."

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 1951 to September 1975, April 1976 to September 1981.
pH: November 1951 to September 1969.
WATER TEMPERATURES: November 1951 to September 1981.
SUSPENDED-SEDIMENT DISCHARGE: February 1910 to January 1911.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1982											
09...	1030	64000	152	8.0	7.5	.80	11.5	--	K7	K6	69
JAN , 1983											
06...	1000	130000	142	8.3	3.5	.90	14.1	112	K2	--	72
MAR											
29...	1130	127000	141	8.3	5.0	1.1	13.0	108	K1	--	68
MAY											
27...	1100	171000	131	8.2	12.5	3.2	12.0	--	K5	73	62
JUL											
05...	1200	97000	132	8.2	15.0	1.5	11.2	118	K4	29	62
SEP											
28...	1200	63000	140	8.3	14.0	1.2	10.2	103	K15	230	66

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV , 1982											
09...	4	20	4.5	2.0	6	.1	.70	65	14	1.2	.20
JAN , 1983											
06...	9	21	4.7	1.5	4	.0	.70	63	12	1.0	.10
MAR											
29...	3	20	4.5	1.7	5	.0	.80	66	11	.80	<.10
MAY											
27...	4	18	4.2	1.8	6	.1	.60	58	11	1.1	.10
JUL											
05...	2	18	4.1	2.1	7	.1	.60	60	11	.70	.10
SEP											
28...	8	20	3.9	1.8	6	.1	.60	58	14	1.0	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1982											
09...	4.8	88	87	.12	15200	<.10	.100	.40	.030	.030	.030
JAN , 1983											
06...	4.5	81	84	.11	28400	.12	.070	.40	.040	.030	.020
MAR											
29...	5.1	81	84	.11	27800	.13	.100	.30	.040	.040	.040
MAY											
27...	5.9	77	78	.10	35600	<.10	.110	.50	.030	.020	.020
JUL											
05...	5.2	82	78	.11	21500	<.10	.060	.20	.060	.050	.030
SEP											
28...	4.3	80	81	.11	13600	<.10	.080	.40	.080	.040	.030

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12400520 COLUMBIA RIVER AT NORTHPORT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV , 1982											
09...	10	1	42	<.5	<1	<1	<3	6	6	11	13
JAN , 1983											
06...	10	1	31	<.5	<1	3	<3	4	4	9	6
MAR											
29...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	10	1	35	<.5	3	<1	<3	6	11	8	<4
JUL											
05...	--	--	--	--	--	--	--	--	--	--	--
SEP											
28...	20	<1	33	<.5	1	<1	<3	7	<3	5	9

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1982											
09...	4	.2	<10	1	<1	<1	86	<6	19	6	1040
JAN , 1983											
06...	4	.2	10	2	<1	<1	110	<6	14	17	5970
MAR											
29...	--	--	--	--	--	--	--	--	--	15	5140
MAY											
27...	2	.1	<10	2	<1	<1	80	<6	21	18	8310
JUL											
05...	--	--	--	--	--	--	--	--	--	10	2620
SEP											
28...	4	.9	<10	6	<1	<1	92	<6	13	2	340

12401500 KETTLE RIVER NEAR FERRY, WA
(International gaging station)

LOCATION.--Lat 48°58'53", long 118°45'55", in SE¼NW¼ sec. 10, T.40 N., R.32 E., Ferry County, Hydrologic Unit 17020002, on right bank 0.5 mi upstream from Catherine Creek, 1.3 mi south of international boundary and Ferry, 3.2 mi upstream from Toroda Creek, and at mile 84.02.

DRAINAGE AREA.--2,200 mi^2, approximately.

PERIOD OF RECORD.--August 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,836.8 ft National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Nov. 23, 1928, nonrecording gage at same site and datum.

REMARKS.--Records excellent. Several small diversions above station for irrigation. No regulation.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--55 years, 1,530 ft^3/s, 1,108,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge,. 21,200 ft^3/s May 29, 1948, gage height, 21.15 ft; minimum, 14 ft^3/s, discharge measurement, Jan. 23, 1930, but may have been less during period of ice effect Jan. 18-23, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,800 ft^3/s May 30, gage height, 19.37 ft; minimum daily, 150 ft^3/s Nov. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	758	702	510	288	395	816	2130	8220	13700	3170	1310	644
2	716	688	520	318	385	829	2280	8280	12500	3170	1210	655
3	695	618	515	340	318	848	2280	8150	11000	3740	1110	903
4	730	642	500	345	272	912	2240	7670	8980	3340	1040	942
5	716	660	450	336	208	990	2270	7630	7740	2970	971	839
6	695	636	435	331	218	1020	2350	8230	6990	2770	904	933
7	681	624	354	336	280	1070	2660	9390	6990	2850	840	900
8	688	594	256	349	354	1120	3080	9770	7240	2690	792	802
9	674	530	246	349	395	1290	3100	8760	7300	2890	746	755
10	648	460	235	354	381	2040	3000	7910	6650	2740	719	740
11	636	415	232	363	350	3090	2800	7460	6630	2420	922	757
12	630	363	264	363	405	3080	2620	7210	5530	2340	1480	929
13	618	425	313	354	405	2850	2480	7120	4890	2600	1660	1000
14	600	340	358	336	420	2630	2410	7200	4570	2990	1270	898
15	588	385	405	336	430	2420	2430	7390	4890	2720	1070	870
16	576	450	455	313	445	2260	2600	7770	7180	2760	952	816
17	558	505	455	304	435	2160	2920	8330	5890	2680	860	757
18	570	546	435	331	446	2080	3510	8060	6230	2480	798	732
19	570	558	430	345	441	1990	4310	7680	5370	2240	741	714
20	535	558	415	345	443	1920	5190	7640	4390	2090	688	688
21	525	515	410	349	456	1860	5950	9100	4200	2070	648	661
22	552	250	405	354	471	1820	6550	10600	4020	1960	611	642
23	538	160	390	354	482	1820	7130	11100	3750	1770	592	627
24	695	150	322	354	518	1830	9400	12000	3780	1640	573	605
25	674	160	296	358	603	1810	12200	12900	4180	1590	561	581
26	667	202	290	367	720	1800	11400	13200	3690	1700	566	559
27	737	276	290	410	786	1830	9970	12900	3340	1790	745	537
28	886	376	290	445	805	1900	8920	13500	3140	1600	773	519
29	807	455	288	430	---	1930	8140	14400	3060	1650	778	511
30	758	495	284	420	---	2050	7980	15200	3290	1640	741	499
31	695	---	276	405	---	2090	---	15200	---	1430	688	---
TOTAL	20466	13738	11324	10982	12267	56155	144300	299970	181110	74490	27359	22015
MEAN	660	458	365	354	438	1811	4810	9676	6037	2403	883	734
MAX	886	702	520	445	805	3090	12200	15200	13700	3740	1660	1000
MIN	525	150	232	288	208	816	2130	7120	3060	1430	561	499
AC-FT	40590	27250	22460	21780	24330	111400	286200	595000	359200	147800	54270	43670

CAL YR 1982 TOTAL 759417 MEAN 2081 MAX 12900 MIN 150 AC-FT 1506000
WTR YR 1983 TOTAL 874176 MEAN 2395 MAX 15200 MIN 150 AC-FT 1734000

12404500 KETTLE RIVER NEAR LAURIER, WA
(International gaging station)

LOCATION.--Lat 48°59'04", long 118°12'55", in SW¼NW¼ sec.11, T.40 N., R.36 E., Ferry County, Hydrologic Unit 17020002, on right bank 1,000 ft downstream from Deep Creek, 1.1 mi south of international boundary, 1.1 mi southeast of Laurier, and at mile 29.71.

DRAINAGE AREA.--3,800 mi², approximately.

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 737: 1930-31. WSP 862: 1937. WSP 882: 1938.

GAGE.--Water-stage recorder. Datum of gage is 1,425.5 ft National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Jan. 3, 1930, nonrecording gage at same site and datum.

REMARKS.--Records excellent except those for Nov. 23-26, Dec. 7-15, Dec. 23 to Jan. 19, and Feb. 4-8, which are fair. Diversions for irrigation of about 720 acres in the United States (for 1946 from United States reports), and 2,090 acres in Canada from the Canada Year Book for 1940. Bonneville Power Administration satellite telemeter at station.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--54 years, 2,918 ft³/s, 2,114,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s May 29, 1948, gage height, 17.25 ft; minimum, 88 ft³/s Dec. 1, 1936, gage height, 2.20 ft, but was probably less during winter of 1929-30.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1894 reached a stage of about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,000 ft³/s May 31, gage height, 15.37 ft; minimum daily, 320 ft³/s Nov. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1190	1220	922	460	875	2190	4470	13900	26400	6370	2650	1200
2	1120	1210	923	500	855	2210	4640	14100	23900	6130	2460	1140
3	1080	1150	927	560	825	2240	4750	14100	21900	6720	2300	1190
4	1070	1100	913	600	600	2340	4630	13600	18200	6520	2140	1440
5	1080	1130	858	660	440	2570	4610	13300	15400	5920	2010	1390
6	1070	1130	820	660	500	2780	4690	14000	13900	5590	1890	1320
7	1050	1100	630	660	600	2910	5020	15900	13400	5740	1770	1440
8	1050	1070	520	660	700	3030	5790	17000	13900	5540	1670	1330
9	1050	1020	480	680	819	3310	6040	15800	14200	5240	1580	1260
10	1010	944	460	700	815	4860	5930	14100	13500	5300	1530	1230
11	985	867	430	700	807	7430	5630	13200	13000	4760	1720	1240
12	971	798	430	700	837	7520	5310	12700	11400	4540	2030	1290
13	964	719	500	660	928	6790	5050	12500	9890	4740	2570	1500
14	950	751	700	640	951	6290	4870	12600	9220	5500	2330	1500
15	936	703	850	600	973	5790	4810	12900	9480	5310	2010	1400
16	922	801	1010	580	1020	5370	4950	13500	12400	5080	1800	1370
17	901	877	989	560	1080	5090	5360	14200	11700	4980	1650	1280
18	881	924	926	600	1120	4850	6120	14300	11400	4680	1530	1220
19	885	978	869	660	1140	4610	7320	13700	10700	4330	1440	1190
20	878	980	817	700	1150	4400	8710	13400	8790	4030	1360	1160
21	847	956	810	705	1180	4220	10100	14800	7850	3910	1260	1130
22	857	822	799	708	1240	4090	11300	17600	7530	3780	1230	1100
23	942	340	700	717	1260	4000	12200	18700	7160	3500	1180	1080
24	1050	320	550	718	1360	4010	14800	20300	7220	3270	1150	1050
25	1110	340	500	725	1590	3960	19700	22100	7930	3140	1120	1020
26	1110	430	490	750	1920	3910	20500	23700	7330	3220	1100	983
27	1200	596	480	816	2090	3920	17900	23500	6670	3280	1120	951
28	1390	716	480	912	2170	4070	15800	23800	6340	3140	1290	912
29	1470	789	470	952	---	4130	14400	25700	6230	3070	1330	892
30	1380	880	470	912	---	4340	13700	27700	6400	3100	1340	880
31	1280	---	460	889	---	4440	---	28500	---	2870	1260	---
TOTAL	32679	25661	21183	21344	29845	131670	259100	525200	353340	143300	51840	36088
MEAN	1054	855	683	689	1066	4247	8637	16940	11780	4623	1672	1203
MAX	1470	1220	1010	952	2170	7520	20500	28500	26400	6720	2650	1500
MIN	847	320	430	460	440	2190	4470	12500	6230	2870	1100	880
AC-FT	64820	50900	42020	42340	59200	261200	513900	1042000	700800	284200	102800	71580

CAL YR 1982 TOTAL 1355244 MEAN 3713 MAX 22000 MIN 320 AC-FT 2688000
WTR YR 1983 TOTAL 1631250 MEAN 4469 MAX 28500 MIN 320 AC-FT 3236000

12406500 LOON LAKE NEAR LOON LAKE, WA

LOCATION.- Lat 48°01'42", long 117'36'14", in SW¼NW¼ sec.11, T.29 N., R.41 E., Stevens County, Hydrologic Unit 170200003, at south end of Loon Lake, 2.7 mi southeast of town of Loon Lake.

DRAINAGE AREA.--14.1 mi².

PERIOD OF RECORD.--April 1950 to June 1980, July 1980 to current year (fragmentary).

REVISED RECORDS.--WSP 1216: 1950. WSP 1933: Drainage area. WDR WA-80-2: 1979.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 29. 1951, water-stage recorder at site 0.2 mi north of same datum.

REMARKS.--Elevation controlled by dam at lake outlet. Some pumping for domestic use and irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,382.71 ft May 3, 1950, but may have been higher sometime in 1951 water year while water-stage recorder was not operating; minimum observed, 2,378.14 ft Nov. 8, 1977, but may have been lower during period when water was below the intakes Aug. 1 to Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,381.31 ft Mar. 15; minimum observed, 2,379.85 ft Oct. 22.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2379.98	---	---	---	2381.09	2381.19	2381.13	---	---	2380.99	---	---
2	---	---	2380.06	---	---	---	---	---	---	---	2380.90	2380.64
3	---	---	---	---	---	---	---	2381.06	2381.02	---	---	---
4	---	---	---	2380.50	2381.08	2381.22	---	---	---	---	---	---
5	2379.94	---	---	---	---	---	2381.08	---	---	2381.00	2380.84	---
6	---	---	2380.11	---	---	---	---	2381.10	---	---	---	2380.60
7	---	---	---	2380.58	---	---	---	---	2380.99	---	---	---
8	2379.92	---	---	---	2381.04	2381.25	2381.03	---	---	2381.02	---	---
9	---	---	2380.11	---	---	---	---	---	---	---	2380.82	2380.55
10	---	---	---	---	---	---	---	2381.11	2380.99	---	---	---
11	---	---	---	2380.61	2381.06	2381.29	---	---	---	---	---	---
12	---	---	---	---	---	---	2380.99	---	---	2381.01	2380.86	---
13	---	---	2380.19	---	---	---	---	2381.11	---	---	---	2380.54
14	---	---	---	2380.64	---	---	---	---	2380.94	---	---	---
15	---	---	---	---	2381.13	2381.31	2381.02	---	---	2380.99	---	---
16	---	---	2380.30	---	---	---	---	---	---	---	2380.80	2380.52
17	---	---	---	---	---	---	---	2381.13	2380.97	---	---	---
18	---	2379.99	---	2380.65	2381.11	2381.25	---	---	---	---	---	---
19	---	---	---	---	---	---	2381.07	---	---	2380.99	2380.74	---
20	---	---	2380.36	---	---	---	---	2381.12	---	---	---	2380.49
21	---	---	---	2380.68	---	---	---	---	2380.98	---	---	---
22	2379.85	2379.97	---	---	2381.14	2381.18	2381.13	---	---	2380.98	---	---
23	---	---	2380.44	---	---	2381.16	---	---	---	---	2380.73	2380.46
24	---	---	---	---	---	---	---	2381.10	2380.97	---	---	---
25	---	2379.94	---	2380.70	2381.13	2381.12	---	---	---	---	---	---
26	---	---	---	---	---	---	2381.17	---	---	2380.95	2380.72	---
27	---	---	2380.44	2380.91	---	---	---	2381.08	---	---	---	2380.43
28	---	---	---	2380.98	---	---	---	---	2380.96	---	---	---
29	---	2379.96	---	---	---	2381.08	2381.15	---	---	2380.92	---	---
30	---	---	2380.44	---	---	---	---	---	---	---	2380.68	2380.40
31	---	---	---	---	---	---	---	2381.03	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

12408500 MILL CREEK NEAR COLVILLE, WA

LOCATION.--Lat 48°34'44", long 117°51'56", in SW¼NW¼ sec.35, T.36 N., R.39 E., Stevens County, Hydrologic Unit 17020003, on right bank 3.0 mi northeast of Colville, 5.3 mi downstream from North Fork, and at mile 10.9.

DRAINAGE AREA.--83.0 mi².

PERIOD OF RECORD.--October 1939 to September 1972, October 1977 to current year.

REVISED RECORDS.--WSP 1042: 1940, 1942. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,950 ft, from topopraphic map. Prior to Mar. 2, 1940, nonrecording gage and Mar. 2, 1940, to Oct. 5, 1959, water-stage recorder at site 0.5 mi upstream at different datum (used as supplementary gage Nov. 2, 1952, to Oct. 5, 1959). Nov. 2, 1952, to Oct. 5, 1959, nonrecording gage and crest-stage gage at site 300 ft upstream at datum 0.47 ft higher.

REMARKS.--Records good except those above 200 ft³/s, which are fair. No regulation. Diversions for irrigation of about 50 acres above station.

AVERAGE DISCHARGE.--39 years (water years 1940-72, 1978-83), 48.1 ft³/s, 7.87 in/yr, 34,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 694 ft³/s Apr. 24, 1969, gage height, 5.37 ft; maximum gage height, 5.65 ft May 10, 1961 (backwater from bridge); minimum discharge, 3.2 ft³/s Jan. 10, 1962, result of freezeup, but may have been less during period of no gage-height record Feb. 1-4, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Mar. 10	1030	*616	*5.09	Apr. 24	2330	451	4.57
Apr. 2	1000	218	3.70	May 8	0630	307	4.09

Minimum daily, 10 ft³/s Nov. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	18	20	15	34	125	185	265	120	58	28	21
2	15	18	20	17	31	134	213	252	119	68	27	21
3	15	18	24	18	28	147	201	245	119	63	26	20
4	15	17	34	19	24	162	185	237	110	55	25	20
5	15	17	28	20	22	190	183	232	104	51	24	19
6	15	17	24	21	24	206	181	242	98	48	23	18
7	17	17	18	21	27	222	183	270	94	47	22	18
8	18	17	15	25	29	235	187	294	89	47	22	18
9	17	15	15	26	29	307	183	257	85	47	21	18
10	17	15	14	24	27	557	185	235	88	43	21	20
11	16	15	14	24	28	481	177	222	98	42	24	23
12	15	14	16	23	39	376	168	208	92	43	24	20
13	15	13	17	21	44	370	162	199	84	47	21	20
14	15	12	18	21	41	334	156	192	77	49	21	18
15	14	12	20	18	41	288	155	201	77	45	20	18
16	14	14	32	20	49	262	156	194	76	43	20	17
17	14	19	35	21	60	245	162	190	72	43	19	17
18	14	24	31	21	76	225	175	187	69	39	18	18
19	14	26	27	20	66	203	192	179	69	36	18	19
20	15	23	25	20	67	190	222	175	67	36	17	18
21	15	21	24	20	69	181	242	177	63	37	17	18
22	17	16	23	20	77	175	257	175	61	34	17	17
23	18	12	21	20	85	177	273	175	72	33	17	17
24	17	11	15	20	92	177	382	172	71	32	40	17
25	15	10	14	21	100	166	436	168	62	34	32	16
26	18	14	14	26	115	158	409	164	57	47	34	16
27	20	16	13	50	117	160	352	156	54	38	30	15
28	18	20	13	55	122	156	307	149	52	34	26	15
29	23	21	12	45	---	172	278	140	53	33	24	16
30	20	21	13	39	---	201	262	132	58	30	23	16
31	18	---	14	35	---	194	---	125	---	29	21	---
TOTAL	505	503	623	766	1563	7176	6809	6209	2410	1331	722	544
MEAN	16.3	16.8	20.1	24.7	55.8	231	227	200	80.3	42.9	23.3	18.1
MAX	23	26	35	55	122	557	436	294	120	68	40	23
MIN	14	10	12	15	22	125	155	125	52	29	17	15
CFSM	.20	.20	.24	.30	.67	2.78	2.73	2.41	.97	.52	.28	.22
IN.	.23	.23	.28	.34	.70	3.22	3.05	2.78	1.08	.60	.32	.24
AC-FT	1000	998	1240	1520	3100	14230	13510	12320	4780	2640	1430	1080

CAL YR 1982	TOTAL	21841.2	MEAN	59.8	MAX	307	MIN	9.0	CFSM	.72	IN.	9.79	AC-FT 43320
WTR YR 1983	TOTAL	29161.0	MEAN	79.9	MAX	557	MIN	10	CFSM	.96	IN.	13.07	AC-FT 57840

1240 COLVILLE RIVER AT KETTLE FALLS, WA

LOCATION.--Lat 48°35'40", Long 118°03'41", in NE¼NE¼ sec.30, T.36 N., R.38, E., Stevens County, Hydrologic Unit 17020003, on right bank 600 ft downstream from Washington Water Power Co.'s hydroelectric plant at foot of Meyers Falls, 1.0 mi south of town of Kettle Falls, and at mile 5.0.

DRAINAGE AREA.--1,007 mi².

PERIOD OF RECORD.--October 1922 to current year. Published as "at Meyer Falls" 1922-38.

REVISED RECORDS.--WSP 1316: 1938(M), 1941(M), 1948(M). WSP 1636: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft, from topographic map. Prior to Oct. 21, 1932, nonrecording gage at site 500 ft upstream at different datum. Oct. 21, 1932, to Sept. 19, 1938, nonrecording gages at site 200 ft upstream at different datum. Sept. 20, 1938, to Mar. 20, 1949, nonrecording gage at present site and datum.

REMARKS.--Records good. Several diversions above station for irrigation. Regulation at low flow by powerplant.

AVERAGE DISCHARGE.--61 years, 305 ft³/s, 221,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,440 ft³/s Jan. 2[illegible], 1974, gage height, 9.84 ft; maximum gage height, 10.17 ft Apr. 23, 1956; minimum discharge observed, 0.5 ft³/s Aug. 15, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,170 ft³/s Mar. 15, gage height, 8.32 ft; minimum, 26 ft³/s Nov. 5, gage height, 4.91 ft, result of regulation by powerplant.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	153	204	196	526	985	1130	1130	569	340	229	174
2	143	149	196	186	468	1010	1200	1130	555	356	218	171
3	140	146	200	189	405	1060	1250	1090	562	395	208	171
4	140	149	276	186	356	1100	1250	1050	555	378	197	168
5	137	149	301	186	317	1140	1200	1030	534	345	191	168
6	137	149	256	213	295	1200	1140	1010	500	325	180	165
7	140	159	208	238	312	1280	1090	1030	474	320	177	161
8	143	159	123	295	323	1340	1090	1090	443	306	174	155
9	143	149	140	367	323	1400	1090	1110	419	306	171	161
10	140	146	131	361	323	1640	1070	1070	407	301	168	161
11	143	146	131	361	334	1950	1080	1020	449	282	177	177
12	140	146	146	378	416	2050	1050	974	494	261	191	201
13	140	131	118	339	546	2110	1010	918	474	269	187	191
14	140	131	162	290	539	2140	966	878	431	320	180	177
15	137	126	172	247	572	2160	934	863	413	325	171	174
16	137	143	242	242	598	2120	902	894	407	315	165	165
17	134	159	383	261	643	1970	886	886	407	311	155	168
18	129	193	400	256	717	1800	878	870	384	306	149	168
19	131	247	361	238	762	1630	886	849	378	282	152	168
20	131	252	312	234	740	1470	910	821	378	261	143	174
21	134	200	285	234	747	1330	950	800	367	287	143	180
22	143	179	271	234	770	1210	982	779	351	282	140	174
23	156	134	256	247	815	1160	1010	758	362	265	138	171
24	168	83	193	271	860	1130	1080	744	425	257	168	165
25	162	97	182	285	867	1090	1240	737	419	252	252	161
26	137	134	238	317	892	1040	1330	716	384	287	244	158
27	165	153	175	520	934	1010	1340	695	345	311	233	158
28	172	149	153	643	951	998	1260	674	325	287	215	155
29	165	189	143	618	---	982	1200	653	315	274	201	155
30	162	204	213	591	---	1060	1160	625	335	257	191	158
31	162	---	200	559	---	1130	---	597	---	241	184	---
TOTAL	4494	4704	6771	9782	16351	43695	32564	27491	12861	9304	5692	5053
MEAN	145	157	218	316	584	1410	1085	887	429	300	184	168
MAX	172	252	400	643	951	2160	1340	1130	569	395	252	201
MIN	129	83	118	186	295	982	878	597	315	241	138	155
AC-FT	8910	9330	13430	19400	32430	86670	64590	54530	25510	18450	11290	10020

CAL YR 1982 TOTAL 139035 MEAN 381 MAX 1230 MIN 83 AC-FT 275800
WTR YR 1983 TOTAL 178762 MEAN 490 MAX 2160 MIN 83 AC-FT 354600

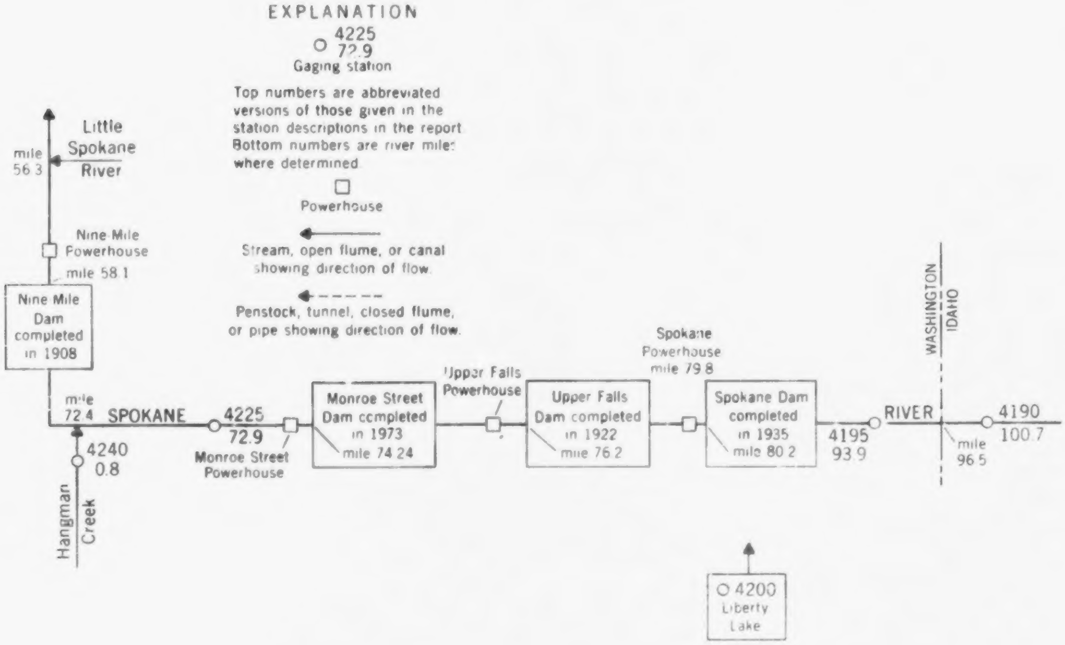
EXPLANATION
4225
72.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Little Spokane River
mile 56.3
Nine Mile Powerhouse
mile 58.1
Nine Mile Dam completed in 1908
mile 72.4
SPOKANE
4225
72.9
Monroe Street Powerhouse
4240
0.8
Hangman Creek
Monroe Street Dam completed in 1973
mile 74.24
Upper Falls Powerhouse
Upper Falls Dam completed in 1922
mile 76.2
Spokane Powerhouse
mile 79.8
Spokane Dam completed in 1935
mile 80.2
4195
93.9
RIVER
WASHINGTON
IDAHO
mile 96.5
4190
100.7
4200
Liberty Lake

Figure 21.—Gaging stations in Spokane River basin above Little Spokane River.

12419000 SPOKANE RIVER NEAR POST FALLS, ID

LOCATION.--Lat 47°42'10", long 116°58'40", in SW¼SW¼ sec.4, T.50 N., R.5 W., Kootenai County, Hydrologic Unit 17010305, on right bank 1.0 mi downstream from powerplant of Washington Water Power Co., 1.5 mi southwest of Post Falls, and at mile 100.7.

DRAINAGE AREA.--3,840 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

PERIOD OF RECORD.--October 1912 to current year (prior to January 1913 monthly discharge only, published in WSP 870 and 1736). Prior to October 1949, published as "at Post Falls."

GAGE.--Water-stage recorder. Datum of gage is 2,050.00 ft referred to originally accepted elevation of 2,157.40 ft for the Geological Survey benchmark in southeast corner of Idaho First National Bank Building (see WSP 882). National Geodetic Vertical Datum of 1929 is at 2,047.00 ft gage datum. Jan. 1, 1913, to Nov. 21, 1920, nonrecording gage and Nov. 22, 1920, to Sept. 15. 1934, recording gage 0.6 mi upstream. From Sept. 16, 1934, to Nov. 15, 1949, recording gage 0.8 mi upstream. From Nov. 16, 1949, at present site. Datum of all gages prior to Sept. 30, 1964, 50.0 ft lower.

REMARKS.--Records good. Rathdrum Prairie Canal (see sta 12418000) diverts water above gage for irrigation. Figures for daily discharge do not include water diverted by this canal. Flow regulated by dam at Post Falls and affected by storage in Coeur d'Alene Lake (see sta 12415500).

AVERAGE DISCHARGE.--River only, 71 years, 6,290 ft³/s, 4,557,000 acre-ft/yr; combined river and diversions above gage, 71 years, 6,370 ft³/s, 4,618,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,100 ft³/s when recorder was not operating Dec. 25, 1933 (determined from unpublished records collected by Washington Water Power Co. for station at Liberty Bridge); minimum, 65 ft³/s July 25, 30, 1973; minimum gage height, 4.68 ft July 20, 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,400 ft³/s Mar. 15, gage height, 17.64 ft; minimum, 114 ft³/s Aug. 25, gage height, 4.97 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1660	2640	2630	5200	7440	14000	11200	11900	16400	4420	1580	1430
2	1660	2620	2950	4970	6100	13900	11700	11800	16200	4530	2540	1430
3	1660	2650	2980	4820	5520	13800	12000	11700	15600	4520	2480	1280
4	1780	2650	3300	4540	5500	14200	12100	11600	14600	4500	1820	1070
5	1990	2650	3560	4700	5500	15000	12100	11600	13900	3980	1480	810
6	2040	2780	3040	5100	5500	16300	11800	11700	13500	3900	1480	424
7	2040	2940	3300	5360	5520	16700	11600	12000	13000	3960	1500	436
8	2050	2970	3720	5490	5480	16900	11400	12200	12200	3620	1480	446
9	2040	2980	3920	5860	5470	17200	10900	12400	11800	3620	1470	825
10	2050	2990	4010	8660	5480	17500	10700	12400	11600	3350	1540	1060
11	2050	2990	4030	10600	5460	17700	10200	12400	11100	2520	2130	1060
12	2040	3010	4020	11900	5460	18200	9590	12300	4010	2260	1860	1320
13	2020	3080	4040	12200	5460	18500	9370	12500	2850	2580	1510	1560
14	2040	3110	4040	11800	5460	18700	9150	12000	2080	5410	1500	1530
15	2070	2950	3880	11000	5470	18600	9170	11900	2920	5380	1490	1650
16	2060	2740	4590	10200	6320	18300	8420	11500	2940	5070	1490	1950
17	2060	2790	4270	9130	7360	17800	7900	11300	2900	5030	1400	1960
18	2090	2860	4570	7710	8290	17000	7660	11200	2900	5010	1150	1800
19	2060	2930	5130	6810	10200	16500	7830	11100	3400	4720	897	1430
20	2060	3040	4940	6510	11900	15800	7910	11200	3790	4720	1380	1430
21	2050	3060	4480	6480	12800	14100	8040	11100	3810	4720	1310	1130
22	2080	3060	4370	6450	13200	13300	8790	11200	3610	4310	355	1110
23	2100	3050	4280	6400	13100	12900	9210	11500	3920	3850	375	1660
24	2080	3080	4680	5520	13400	12400	10100	11800	5220	3850	373	1940
25	2070	3070	5000	5470	13500	12000	11200	12200	4550	3230	786	1940
26	2080	3080	5070	4800	13700	11600	12500	13300	3500	2430	1710	1940
27	2030	3120	5110	4180	13900	11200	13000	14200	4970	2380	1730	1960
28	2020	3060	5170	4630	14000	10400	13000	15100	5570	2380	1740	1970
29	2480	2810	5180	8270	---	9970	12800	15400	5720	2360	1620	1940
30	2630	2680	5170	8410	---	10300	12300	15700	4940	2360	1470	1930
31	2660	---	5190	8340	---	10800	---	16300	---	2150	1410	---
TOTAL	63820	87440	130620	221510	236490	461570	313740	384500	224500	117120	45052	42421
MEAN	2059	2915	4214	7145	8445	14890	10460	12400	7483	3778	1453	1414
MAX	2660	3120	5190	12200	14000	18700	13000	16300	16400	5410	2540	1970
MIN	1660	2620	2630	4180	5460	9970	7660	11100	2850	2150	355	424
AC-FT	126600	173400	259100	439400	469100	915500	622300	762700	445300	232300	89360	84140
MEAN†	2059	2915	4214	7145	8446	14890	10460	12430	7518	3799	1486	1427
AC-FT†	126600	173400	259100	439400	469100	915500	622300	764000	447400	233500	91350	84920

CAL YR 1982 TOTAL 2970730 MEAN 8139 MAX 38300 MIN 660 AC-FT 5892000 MEAN† 8152 AC-FT† 5902000
WTR YR 1983 TOTAL 2328783 MEAN 6380 MAX 18700 MIN 355 AC-FT 4619000 MEAN† 6391 AC-FT† 4627000

NOTE.--No gage-height record Nov. 2 to Dec. 20, Apr. 19-21.
† Adjusted for diversion through Rathdrum Prairie Canal.

12419500 SPOKANE RIVER ABOVE LIBERTY BRIDGE, NEAR OTIS ORCHARDS, WA

LOCATION.--Lat 47°40'50", long 117°05'05", in NW¼ sec.11, T.25 N., R.45 E., Spokane County, Hydrologic Unit 17010305, on left bank 1.2 mi upstream from Liberty Bridge, 1.8 mi southeast of Otis Orchards, 3.3 mi northeast of Greenacres, and at mile 93.9.

DRAINAGE AREA.--3,880 mi², approximately.

PERIOD OF RECORD.--January 1929 to December 1936, March 1937, August 1937 to August 1941, October 1941 to October 1942, February to May 1943, August 1943 to November 1946, February to July 1947, September 1947 to February 1948; May to November 1948, March to November 1949, and April to September 1950 (monthly discharge only); October 1950 to current year (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 2,000 ft National Geodetic Vertical Datum of 1929 (levels by Washington Water Power Co.).

REMARKS.--Records excellent. Flow partly regulated by dam at Post Falls, Idaho, 8.2 mi upstream and affected by storage in Coeur d'Alene Lake. Rathdrum Prairie Canal, 12.7 mi upstream, diverts water for irrigation of about 3,000 acres above station.

AVERAGE DISCHARGE.--47 years (water years 1930-36, 1938-40, 1942, 1944-46, 1951-83), 6,137 ft³/s, 4,446,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,100 ft³/s Dec. 25, 1933, gage height, 22.24 ft; minimum daily, 38 ft³/s July 20, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,100 ft³/s Mar. 15, gage height, 16.63 ft; minimum, 162 ft³/s Aug. 25, gage height, 7.89 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1440	2390	2400	4940	7080	13300	10600	11300	16000	4220	1330	365
2	1450	2390	2720	4760	5890	13200	11100	11300	15800	4300	2300	365
3	1440	2420	2750	4600	5240	13200	11500	11200	15000	4300	2330	365
4	1530	2420	3070	4360	5220	13600	11600	11100	14000	4280	1740	365
5	1730	2420	3330	4460	5240	14500	11500	11000	13200	3820	1330	365
6	1800	2550	2810	4840	5220	15900	11300	11100	12700	3630	1320	320
7	1800	2710	3070	5080	5220	16400	11100	11400	12300	3790	1330	320
8	1800	2740	3490	5190	5190	16700	10900	11600	11500	3420	1320	324
9	1800	2750	3690	5440	5190	17000	10400	11800	11100	3420	1310	551
10	1800	2760	3780	7920	5190	17300	10200	11800	10900	3210	1320	888
11	1810	2760	3800	9960	5190	17500	9750	11800	10400	2400	1960	888
12	1800	2780	3790	11100	5190	18100	9210	11600	3960	2100	1740	1080
13	1780	2850	3810	11600	5190	18400	8940	11900	2720	2340	1350	1380
14	1800	2880	3810	11200	5190	18600	8670	11300	2730	4960	1340	1350
15	1820	2720	3650	10500	5190	18600	8820	11200	2780	5190	1330	1440
16	1840	2510	4360	9600	5860	18200	8010	10900	2780	4800	1330	1770
17	1810	2560	4040	8580	6790	17700	7520	10700	2750	4760	1270	1790
18	1850	2630	4340	7310	7660	16800	7260	10600	2750	4760	1010	1680
19	1830	2700	4900	6430	9420	16200	7230	10500	3200	4480	688	1270
20	1830	2810	4850	6120	11200	15500	7310	10600	3600	4480	1170	1260
21	1820	2830	4280	6090	12100	13400	7440	10400	3600	4480	1260	1090
22	1840	2830	4170	6060	12500	12700	8040	10600	3600	4140	288	784
23	1870	2820	4070	6040	12500	12300	8760	10800	3700	3630	296	1450
24	1850	2850	4400	5260	12800	11900	9570	11100	4940	3610	284	1780
25	1830	2840	4760	5220	12900	11500	10700	11600	4460	3120	292	1770
26	1860	2850	4820	4700	13100	11000	11900	12600	3290	2250	365	1770
27	1830	2890	4860	4060	13300	10700	12500	13500	4640	2200	365	1790
28	1800	2830	4920	4340	13400	9900	12400	14500	5260	2200	365	1810
29	2220	2580	4920	7690	---	9450	12300	14800	5390	2190	365	1780
30	2600	2450	4920	7860	---	9810	11800	15200	4780	2190	365	1770
31	2360	---	4940	7770	---	10200	---	15900	---	2020	365	---
TOTAL	56640	80520	123520	209080	224160	449560	298330	365700	213830	110690	33428	33930
MEAN	1827	2684	3985	6745	8006	14500	9944	11800	7128	3571	1078	1131
MAX	2600	2890	4940	11600	13400	18600	12500	15900	16000	5190	2330	1810
MIN	1440	2390	2400	4060	5190	9450	7230	10400	2720	2020	284	320
AC-FT	112300	159700	245000	414700	444600	891700	591700	725400	424100	219600	66300	67300

CAL YR 1982 TOTAL 2869917 MEAN 7863 MAX 37000 MIN 499 AC-FT 5692000
WTR YR 1983 TOTAL 2199388 MEAN 6026 MAX 18600 MIN 284 AC-FT 4362000

12420000 LIBERTY LAKE AT LIBERTY LAKE, WA

LOCATION.--Lat 47°39'09", long 117°05'20", in NE¼ sec.22, T.25 N., R.45 E., Spokane County, Hydrologic Unit 17010305, on right wall of concrete outlet flume at town of Liberty Lake, 15.0 mi east of Spokane.

DRAINAGE AREA.--13.3 mi².

PERIOD OF RECORD.--December 1950 to December 1955 (fragmentary), January 1956 to July 1966, August 1966 to current year (fragmentary).

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1958, published at datum 2,046.48 ft higher.

REMARKS.--Stage controlled by gates at outlet. Some pumping from lake for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,051.81 ft, from high-water mark, occurred during period Jan. 19 to Feb. 5, 1974; minimum observed, 2,045.56 ft Nov. 11, 15, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,050.65 ft Mar. 14; minimum observed, 2,047.38 ft Nov. 9.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2047.45	---	---	---	---	2049.98	2050.45	2049.65	---	2049.28	2048.90	---
2	---	2047.42	---	---	2049.40	---	---	---	---	---	---	---
3	---	---	---	---	2049.45	---	---	---	2048.42	---	---	---
4	2047.40	---	2047.80	2048.44	---	2050.20	2050.40	---	---	---	---	---
5	---	---	---	---	2049.45	---	---	---	---	2049.20	2048.80	---
6	---	---	---	2048.60	---	---	---	2049.65	2049.40	---	---	---
7	---	---	2047.84	2048.60	2049.48	---	---	---	---	2049.15	---	---
8	---	---	---	---	---	2050.30	---	---	---	---	---	---
9	---	2047.38	---	2048.75	---	---	---	---	---	---	2048.76	2048.40
10	---	---	---	---	2049.48	---	---	2049.63	2049.40	---	---	---
11	2047.40	---	---	---	2049.48	2050.50	2050.30	---	---	---	---	---
12	---	---	---	2048.80	---	---	---	---	---	2049.12	2048.70	---
13	---	---	---	2048.80	2049.50	---	---	---	2049.36	---	---	2048.36
14	---	2047.41	---	---	2049.50	2050.65	---	---	---	---	---	---
15	---	---	2047.90	2048.90	---	---	2050.20	---	---	---	2048.68	---
16	---	---	---	---	---	---	---	2049.56	---	---	---	---
17	---	2047.50	---	2048.98	---	---	---	---	2049.32	---	---	2048.30
18	---	---	---	2049.00	2049.60	2050.60	2050.05	---	---	---	2048.65	---
19	---	---	2047.94	---	---	---	---	---	---	2049.15	---	2048.26
20	---	---	---	---	---	---	---	2049.52	---	---	---	---
21	---	---	---	2049.05	2049.80	---	---	---	---	---	---	---
22	---	---	---	---	---	2050.50	2050.00	---	---	---	---	---
23	---	---	---	---	---	---	---	2049.50	2049.30	---	2048.62	2048.20
24	---	2047.49	2048.00	---	2049.90	2050.52	2049.80	---	---	---	2048.66	---
25	---	---	---	2049.10	---	2050.50	---	---	---	2049.10	---	---
26	---	---	---	---	---	---	---	---	---	---	2048.60	2048.20
27	2047.40	---	---	2049.20	---	---	---	2049.48	---	---	---	---
28	---	2047.48	---	2049.28	---	2050.54	2049.76	---	2049.28	2049.00	---	---
29	---	---	---	---	---	---	---	---	---	---	2048.60	---
30	---	---	2048.10	2049.34	---	---	---	2048.46	---	---	---	2048.10
31	---	---	---	2049.40	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

12422500 SPOKANE RIVER AT SPOKANE, WA

LOCATION.--Lat 47°39'34", long 177°26'53", in SW¼SW¼ sec.13, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010305, on right bank at Cochran Street in Spokane, 0.5 mi upstream from Hangman Creek, and at mile 72.9.

DRAINAGE AREA.--4,290 mi², approximately.

PERIOD OF RECORD.--April 1891 to current year. Chemical analyses October 1972 to September 1973.

REVISED RECORDS.--WSP 532: 1891-1904. WSP 1246: Drainage area. WSP 1286: 1907-09.

GAGE.--Water-stage recorder. Datum of gage is 1,696.6 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to July 1, 1921, water-stage recorders and nonrecording gages at several sites within 4 mi of present site at various datums.

REMARKS.--Records excellent except for Aug. 22, which is good. Discharge for Jan. 10-20 provided by Washington Water Power Co. Flow partly regulated by powerplants of Washington Water Power Co. at Post Falls, Idaho, 28.8 mi upstream and at Spokane, 1.3 mi upstream, and by Coeur d'Alene Lake, Idaho. Rathdrum Prairie Canal diverts water above station for irrigation. In 1946, approximately 22,600 acres, of which about 15,000 acres utilized surface water, were under irrigation upstream from Spokane. Since 1966 irrigation has been from many wells in the valley near the river with only about 3,000 acres irrigated from the river.

AVERAGE DISCHARGE.--92 years, 6,858 ft³/s, 4,969,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,000 ft³/s, estimated, May 31, 1894 (see WSP 532); minimum, 95 ft³/s Sept. 19, 1956, gage height, 15.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,800 ft³/s Mar. 15, gage height, 24.33 ft; minimum daily, 1,110 ft³/s Aug. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1990	2950	2970	5470	7890	14400	11600	12300	16800	4970	2290	1900
2	2030	2930	3300	5420	6830	14300	12100	12200	16700	5030	2860	1920
3	2000	2990	3310	5330	6050	14200	12500	12200	16000	5020	3070	1890
4	2060	2980	3490	5000	6020	14500	12700	12100	15200	5000	2660	1700
5	2240	2990	3910	4990	6000	15500	12700	12000	14400	4700	2120	1520
6	2320	3030	3430	5350	5990	16600	12400	12100	14000	4280	2070	1260
7	2330	3180	3520	5660	5980	17200	12200	12400	13500	4610	2060	1150
8	2330	3260	3920	5750	5970	17500	12000	12600	12700	4150	2050	1130
9	2350	3270	4170	5850	5950	17800	11500	12800	12200	4170	2000	1170
10	2340	3260	4260	7810	5940	18100	11200	12900	12000	4040	1990	1550
11	2370	3260	4290	10000	5920	18400	10800	12900	11700	3380	2460	1550
12	2370	3310	4310	11400	5910	18900	10300	12800	6570	2960	2420	1570
13	2350	3340	4320	12100	5910	19300	10100	12900	4130	3000	2080	1940
14	2340	3410	4350	11900	5900	19500	9500	12500	3980	4950	2020	1960
15	2380	3350	4170	11200	5910	19500	9940	12300	3970	5890	2340	1940
16	2410	3080	4560	10400	6360	19300	8930	12000	3880	5370	2560	2250
17	2380	3190	4680	9390	7200	18800	8570	11700	3820	5280	2200	2310
18	2420	3160	4690	8230	8110	18100	8220	11600	3780	5400	1930	2350
19	2410	3320	5310	7280	9600	17400	8190	11500	3950	5070	1590	1950
20	2430	3270	5370	6890	11600	16700	8180	11500	4460	5060	1580	1900
21	2430	3370	4880	6860	12700	15000	8270	11400	4480	5060	2160	1930
22	2430	3370	4760	6780	13100	14100	8700	11500	4430	4890	1400	1460
23	2490	3360	4650	6790	13300	13700	9360	11700	4490	4330	1110	1860
24	2460	3390	4820	6170	13600	13200	10200	12000	5390	4300	1190	2270
25	2440	3390	5220	5990	13800	12800	11300	12400	5440	4020	1180	2290
26	2470	3390	5290	5540	13900	12400	12500	13400	4140	3120	1950	2290
27	2460	3460	5350	4900	14200	11900	13400	14300	5090	3050	2170	2320
28	2390	3440	5470	4840	14300	11100	13500	15200	5910	3020	2190	2360
29	2620	3270	5430	8120	---	10600	13300	15600	6050	2980	2140	2360
30	3130	3160	5440	8440	---	10800	12900	16000	5600	2950	2000	2350
31	2900	---	5470	8440	---	11200	---	16600	---	2840	1920	---
TOTAL	74070	97130	139070	228290	243940	482800	327060	395300	244760	132890	63760	56400
MEAN	2389	3238	4486	7364	8712	15570	10900	12750	8159	4287	2057	1880
MAX	3130	3460	5470	12100	14300	19500	13500	16600	16800	5890	70	2360
MIN	1990	2930	2970	4840	5900	10600	8180	11400	3780	2840	10	1130
AC-FT	146900	192700	275800	452800	483900	957600	648700	784100	485500	263600	126500	111900

CAL YR 1982 TOTAL 3042170 MEAN 8335 MAX 17800 MIN 1110 AC-FT 6034000
WTR YR 1983 TOTAL 2485470 MEAN 6810 MAX 19500 MIN 1110 AC-FT 4930000

BLE

12424000 HANGMAN CREEK AT SPOKANE, WA

LOCATION.--Lat 47°39'10", long 117°26'55", in NW¼ sec.24, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010306, on left bank 0.3 mi downstream from bridge on Interstate 90 in Spokane, and at mile 0.8.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1948 to September 1977; October 1977 to September 1978 (discharges above 20 ft³/s only), October 1978 to current year. Prior to October 1958, published as Latah Creek at Spokane.

REVISED RECORDS.--WSP 1933: Drainage area. WSP 2133: 1965(P).

GAGE.--Water-stage recorder. Datum of gage is 1,717.42 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 22, 1948, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Records good except those for Dec. 17 to May 24, which are fair. No regulation. Some diversions for irrigation above station. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--34 years (water years 1949-77, 1979-83), 247 ft³/s, 4.87 in/yr, 179,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s Feb. 3, 1963, gage height, 13.35 ft; minimum, 1.4 ft³/s Sept. 6, 7, 9, 10, 14-17, 1973; minimum gage height, 1.43 ft part or all of each day Aug. 19, 20, 28, Sept. 14, 15, 17-22, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 7	0200	3,760	7.44	Mar. 5	0645	3,260	7.00
Feb. 19	0215	*4,210	*7.81	Mar. 30	0900	3,770	7.45

Minimum discharge, 17 ft³/s Oct. 19-21, gage height, 1.70 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	32	135	50	356	676	963	96	53	49	30	23
2	21	29	136	52	303	851	925	97	52	51	29	23
3	24	29	101	54	236	1150	957	92	51	52	29	23
4	25	28	113	57	172	833	708	86	51	55	27	24
5	24	28	413	1370	144	2360	570	84	51	55	26	23
6	23	28	203	2500	136	1830	500	94	55	51	25	23
7	22	29	127	3180	144	1470	469	239	55	50	24	22
8	20	29	90	2410	128	1220	431	276	51	48	23	22
9	19	29	60	1150	132	1180	387	251	52	46	23	22
10	19	38	60	798	211	1150	371	270	60	45	24	25
11	19	35	62	781	509	1000	352	228	62	43	27	26
12	19	31	62	555	925	1470	316	195	65	41	33	27
13	19	29	62	456	1150	1430	276	160	62	44	29	27
14	19	28	62	341	857	1590	239	136	64	48	26	26
15	19	24	68	267	660	931	214	140	62	64	25	26
16	19	24	248	225	1080	730	197	136	61	66	24	26
17	19	31	1600	214	1560	640	179	156	56	58	23	25
18	19	33	976	200	2920	551	167	149	51	57	22	26
19	18	33	509	190	3350	482	163	132	49	48	22	26
20	18	47	371	195	1630	431	153	118	51	44	22	26
21	18	96	741	200	1620	407	134	103	44	42	21	26
22	21	70	1430	214	1240	375	134	92	44	41	22	26
23	23	50	725	205	1060	456	132	86	52	38	21	25
24	23	40	403	264	857	469	140	86	56	41	22	25
25	24	35	248	296	741	375	184	78	57	42	24	25
26	28	35	187	331	815	320	177	75	52	40	26	25
27	26	35	130	894	725	316	153	71	49	38	26	24
28	28	39	100	839	609	368	147	69	46	36	25	23
29	31	49	80	509	---	338	128	65	48	34	26	22
30	31	60	70	411	---	2610	108	61	45	32	24	22
31	32	---	60	448	---	1460	---	56	---	32	23	---
TOTAL	689	1123	9632	19656	24270	29469	9974	3977	1607	1431	773	734
MEAN	22.2	37.4	311	634	867	951	332	128	53.6	46.2	24.9	24.5
MAX	32	96	1600	3180	3350	2610	963	276	65	66	33	27
MIN	18	24	60	50	128	316	108	56	44	32	21	22
CFSM	.03	.05	.45	.92	1.26	1.38	.48	.19	.08	.07	.04	.04
IN.	.04	.06	.52	1.06	1.31	1.59	.54	.21	.09	.08	.04	.04
AC-FT	1370	2230	19110	38990	48140	58450	19780	7890	3190	2840	1530	1460

CAL YR 1982 TOTAL 115026.8 MEAN 315 MAX 7000 MIN 6.0 CFSM .46 IN. 6.21 AC-FT 228200
WTR YR 1983 TOTAL 103335.0 MEAN 283 MAX 3350 MIN 18 CFSM .41 IN. 5.58 AC-FT 205000

12431000 LITTLE SPOKANE RIVER AT DARTFORD, WA

LOCATION.--Lat 47°47'05", long 117°24'12", in NE¼NW¼ sec.5, T.26 N., R.43 E., Spokane County, Hydrologic Unit 17010308, on left bank 50 ft upstream from county bridge, 0.5 mi east of Dartford, 1.7 mi downstream from Deadman Creek, 7.5 mi north of Spokane, and at mile 11.4.

DRAINAGE AREA.--665 mi².

PERIOD OF RECORD.--April 1929 to September 1932, December 1946 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1930, 1932(M), 1947-49(M). WSP1446: 1951(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,590 ft, from topographic map. Prior to Mar. 16, 1951, nonrecording gage and Mar. 16, 1951 to July 5, 1961 water-stage recorder, at site 0.5 mi downstream at different datum.

REMARKS.--Records excellent. No regulation. Small diversions for irrigation above station.

AVERAGE DISCHARGE.--39 years (water years 1930-32, 1948-83), 309 ft³/s, 6.31 in/yr, 223,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,170 ft³/s Feb. 17, 1970, gage height, 7.23 ft; minimum observed, 63 ft³/s July 24, 1930, gage height, 1.07 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 940 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 18	1600	1,120	4.93	Mar. 10	1200	*1,590	*5.72
Feb. 21	1500	1,190	5.08	Mar. 30	1900	1,500	5.59

Minimum discharge, 137 ft³/s Oct. 1, 2; minimum gage height, 2.11 ft Oct. 1, 2, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	161	231	200	515	951	890	509	272	278	198	169
2	139	161	217	187	483	951	895	495	272	280	194	171
3	141	161	231	214	443	975	918	433	267	303	185	171
4	141	161	292	214	405	927	861	473	261	280	181	171
5	139	165	264	234	379	959	829	463	253	256	177	169
6	141	183	236	280	370	987	811	474	246	243	175	169
7	142	179	207	321	379	1080	799	516	238	233	169	167
8	142	171	183	458	370	1200	798	543	233	229	169	165
9	142	165	180	503	370	1220	772	504	226	238	165	163
10	142	163	180	430	379	1530	764	483	233	231	163	167
11	142	163	179	454	395	1470	763	461	264	221	179	183
12	142	161	192	395	464	1430	728	444	253	217	189	185
13	142	161	192	354	639	1400	696	428	243	231	181	179
14	141	156	192	324	651	1480	668	422	233	315	175	177
15	141	154	198	298	627	1280	645	430	233	286	171	175
16	142	161	248	295	719	1180	622	441	259	267	169	171
17	144	181	339	297	811	1110	604	420	246	256	167	169
18	144	248	348	292	1040	1040	586	408	233	243	163	171
19	142	251	306	286	935	975	570	397	238	231	159	175
20	144	221	278	289	855	928	551	368	246	229	155	175
21	146	207	292	292	1100	888	540	380	231	259	155	171
22	152	185	336	292	1010	849	534	368	224	233	155	171
23	171	179	303	321	1040	828	525	358	246	221	161	169
24	175	171	251	332	1000	818	567	349	292	214	183	169
25	161	173	251	347	988	779	611	342	264	229	194	167
26	163	175	251	370	1010	740	602	330	241	233	185	167
27	173	175	241	603	1020	719	602	324	233	224	181	167
28	167	192	226	859	967	747	568	315	243	221	179	165
29	167	226	224	675	---	759	546	300	238	217	177	165
30	167	243	214	579	---	1200	526	286	275	209	175	165
31	163	---	214	544	---	1010	---	278	---	200	171	---
TOTAL	4637	5453	7496	11539	19364	32410	20391	12812	7436	7527	5400	5118
MEAN	150	182	242	372	692	1045	680	413	248	243	174	171
MAX	175	251	348	859	1100	1530	918	543	292	315	198	185
MIN	139	154	179	187	370	719	525	278	224	200	155	163
CFSM	.23	.27	.36	.56	1.04	1.57	1.02	.62	.37	.37	.26	.26
IN.	.26	.31	.42	.65	1.08	1.81	1.14	.72	.42	.42	.30	.29
AC-FT	9200	10820	14870	22890	38410	64290	40450	25410	14750	14930	10710	10150

CAL YR 1982 TOTAL 115200 MEAN 316 MAX 1550 MIN 118 CFSM .48 IN. 6.44 AC-FT 228500
WTR YR 1983 TOTAL 139583 MEAN 382 MAX 1530 MIN 139 CFSM .57 IN. 7.81 AC-FT 276900

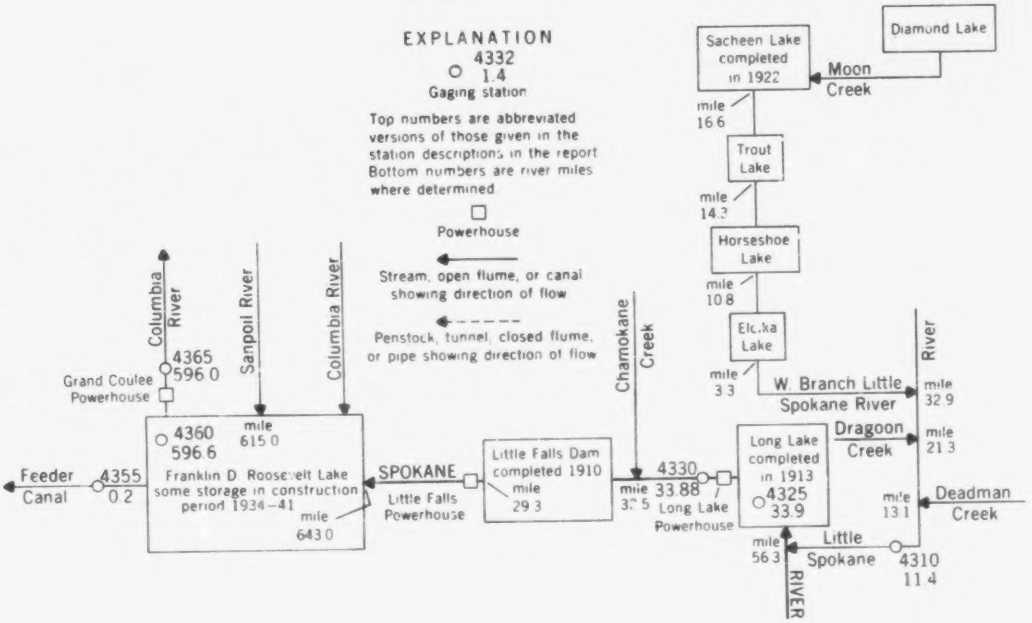
EXPLANATION
4332
1.4
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
Diamond Lake
Sacheen Lake completed in 1922
Moon Creek
mile 16.6
Trout Lake
mile 14.3
Horseshoe Lake
mile 10.8
Eloika Lake
mile 3.3
W. Branch Little Spokane River
River
mile 32.9
Dragoon Creek
mile 21.3
Deadman Creek
mile 13.1
Little Spokane
4310
11.4
RIVER
mile 56.3
Long Lake completed in 1913
4325
33.9
4330
33.88
mile 33.5
Long Lake Powerhouse
Chamokane Creek
Little Falls Dam completed 1910
mile 29.3
SPOKANE
Little Falls Powerhouse
Columbia River
Sanpoil River
mile 615.0
Columbia River
4365
596.0
Grand Coulee Powerhouse
4360
596.6
Franklin D. Roosevelt Lake some storage in construction period 1934-41
mile 643.0
4355
0.2
Feeder Canal

Figure 22.—Gaging stations in Spokane River basin from Little Spokane River downstream and at Grand Coulee Dam.

12432500 LONG LAKE AT LONG LAKE, WA

LOCATION.--Lat 47°50'12", long 117°50'20", in NW¼SW¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, at left end of spillway at Long Lake Dam on Spokane River, 12.0 mi north of Reardan, and at mile 33.9.

DRAINAGE AREA.--6,020 mi², approximately.

PERIOD OF RECORD.--October 1913 to current year. Prior to October 1950 monthend contents only, published in WSP 1316. October 1950 to September 1977 monthend stage and contents only.

REVISED RECORDS.--WSP 1736: Monthend contents for 1916-33 corrected. WSP 1933: Drainage area.

GAGE.--Water-stage recorder with remote indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 929 (levels by Washington Water Power Co.).

REMARKS.--Reservoir is formed by concrete dam, completed in 1913 and raised in 1950. Capacity, 104,200 acre-ft between elevations 1,512 ft and 1,536 ft, normal limits of operation. Contents at elevation 1,512 ft by capacity table used prior to October 1915, 148,600 acre-ft. Records given herein represent usable contents. Water used for power. About 25,000 acres irrigated above station, largely from wells in the Spokane Valley. Flow regulated by Coeur d'Alene Lake (see sta 12415500) and powerplants along Spokane River.

COOPERATION.--Lake elevations and capacity table furnished by Washington Water Power Co. Records not reviewed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 107,600 acre-ft Jan. 16, 1974, elevation, 1,536.67 ft; minimum, since filling reservoir in 1920, 5,400 acre-ft Mar. 8, 1966, elevation, 1,513.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 104,112 acre-ft Aug. 8, elevation, 1,535.98 ft; minimum, 97,410 acre-ft July 21, elevation, 1,534.64 ft.

Capacity table (elevation, in feet and usable contents, in acre-feet)
(Based on data furnished by Washington Water Power Company)

1,513	3,570	1,528	65,460	1,534	94,240
1,517	18,640	1,531	79,740	1,535	99,190
1,520	30,550	1,532	84,540	1,536	104,200
1,522	38,880	1,533	89,360	1,537	109,300
1,526	56,330				

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1535.08	1535.70	1535.62	1535.55	1535.50	1535.57	1535.42	1535.31	1535.37	1535.62	1535.43	1535.56
2	1535.19	1535.68	1535.54	1535.52	1535.45	1535.57	1535.30	1535.29	1535.29	1535.45	1535.66	1535.58
3	1535.26	1535.78	1535.44	1535.49	1535.35	1535.65	1535.48	1535.26	1535.19	1535.32	1535.70	1535.70
4	1535 43	1535.83	1535.68	1535.43	1535.45	1535.60	1535.54	1535.43	1535.40	1535.38	1535.59	1535.46
5	1535.25	1535.53	1535.61	1535.30	1535.52	1535.64	1535.46	1535.56	1535.60	1535.48	1535.51	1535.42
6	1535.24	1535.21	1535.45	1535.43	1535.56	1535.50	1535.40	1535.54	1535.48	1535.68	1535.61	1535.25
7	1535.35	1535.32	1535.49	1535.35	1535.62	1535.49	1535.40	1535.58	1535.44	1535.72	1535.56	1535.50
8	1535.45	1535.40	1535.50	1535.24	1535.63	1535.51	1535.40	1535.59	1535.34	1535.72	1535.70	1535.45
9	1535.57	1535.56	1535.49	1535.23	1535.51	1535.55	1535.35	1535.58	1535.46	1535.74	1535.70	1535.53
10	1535.43	1535.67	1535.50	1535.48	1535.40	1535.28	1535.43	1535.58	1535.62	1535.52	1535.68	1535.43
11	1535.44	1535.57	1535.50	1535.50	1535.46	1535.20	1535.47	1535.57	1535.68	1535.45	1535.77	1535.35
12	1535.62	1535.50	1535.60	1535.28	1535.52	1534.95	1535.45	1535.52	1535.65	1535.43	1535.73	1535.45
13	1535.70	1535.55	1535.58	1535.42	1535.57	1535.00	1535.61	1535.59	1535.75	1535.42	1535.58	1535.65
14	1535.74	1535.60	1535.44	1535.43	1535.54	1534.96	1535.56	1535.52	1535.78	1535.28	1535.52	1535.59
15	1535.66	1535.64	1535.30	1535.38	1535.63	1534.88	1535.63	1535.38	1535.73	1535.08	1535 70	1535.52
16	1535.65	1535.50	1535.04	1535.60	1535.62	1534.90	1535.40	1535.36	1535.67	1535.01	1535.76	1535.55
17	1535.48	1535.61	1535.31	1535.67	1535.64	1534.79	1535.30	1535.37	1535.66	1534.90	1535.56	1535.57
18	1535.47	1535.51	1535.43	1535.40	1535.60	1534.72	1535.35	1535.44	1535.62	1534.85	1535.56	1535.84
19	1535.53	1535.65	1535.54	1535.27	1535.50	1535.21	1535.57	1535.56	1535.50	1534.77	1535.55	1535.86
20	1535.60	1535.71	1535.68	1535.40	1535.30	1535.20	1535.58	1535.62	1535.53	1534.77	1535.50	1535.84
21	1535.68	1535.73	1535.73	1535.70	1535.45	1534.90	1535.59	1535.56	1535.58	1534.70	1535.75	1535.83
22	1535.70	1535.55	1535.73	1535.68	1535.48	1535.00	1535.63	1535.53	1535.63	1534.70	1535.68	1535.75
23	1535.79	1535.50	1535.85	1535.63	1535.45	1535.20	1535.70	1535.55	1535.75	1534.77	1535.65	1535.63
24	1535.70	1535.35	1535.77	1535.68	1535.50	1535.26	1535.65	1535.56	1535.69	1534.96	1535.68	1535.65
25	1535.62	1535.37	1535.70	1535.79	1535.63	1535.31	1535.58	1535.64	1535.79	1535.24	1535.63	1535.70
26	1535.64	1535.60	1535.68	1535.52	1535.60	1535.50	1535.56	1535.73	1535.53	1535.25	1535.65	1535.60
27	1535.70	1535.65	1535.65	1535.50	1535.57	1535.40	1535.55	1535.74	1535.70	1535.45	1535.65	1535.67
28	1535.57	1535.58	1535.64	1535.35	1535.55	1535.35	1535.47	1535.45	1535.70	1535.44	1535.53	1535.70
29	1535.44	1535.32	1535.61	1535.68	---	1535.33	1535.45	1535.26	1535.65	1535.51	1535.28	1535.62
30	1535.70	1535.70	1535.61	1535.81	---	1535.30	1535.40	1535.33	1535.70	1535.55	1535.47	1535.64
31	1535.61	---	1535.57	1535.65	---	1535.39	---	1535.40	---	1535.45	1535.33	---
MEAN	1535.53	1535.57	1535.56	1535.50	1535.52	1535.26	1535.49	1535.50	1535.58	1535.28	1535.60	1535.60
MAX	1535.79	1535.83	1535.85	1535.81	1535.64	1535.65	1535.70	1535.74	1535.79	1535.74	1535.77	1535.86
MIN	1535.08	1535.21	1535.04	1535.23	1535.30	1534.72	1535.30	1535.26	1535.19	1534.70	1535.28	1535.25
†	102255	102708	102055	102456	101956	101153	101202	101202	102708	101452	100851	102406
‡	+4250	+453	-653	+401	-500	-803	+49	0	+1506	-1256	-601	+1555

CAL YR 1982......................‡ -502
WTR YR 1983 ....‡ +4401

† Contents, in acre-feet, on last day of month.
‡ Change in contents, in acre-feet.

12433000 SPOKANE RIVER AT LONG LAKE, WA
(National stream quality acounting network station)

LOCATION.--Lat 47°50'12", long 117°50'25", in NW¼SW¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, on left bank at Long Lake powerhouse, 1.4 mi upstream from Chamokane Creek, 12.0 mi north of Reardan, and at mile 33.88.

DRAINAGE AREA.--6,020 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,299.00 ft National Geodetic Vertical Datum of 1929 (levels by Washington Water Power Co.). Oct. 1, 1978, to Sept. 30, 1981, published at datum 1,300 ft lower.

REMARKS.--Flow regulated by Coeur d'Alene Lake (see sta 12415500) and Long Lake (see sta 12432500) for powerplants of Washington Water Power Co. About 25,000 acres irrigated above station, largely from wells in the Spokane Valley.

COOPERATION.--Discharge records furnished by Washington Water Power Co.; two discharge measurements made by Geological Survey.

AVERAGE DISCHARGE.--44 years, 7,965 ft³/s, 5,771,000 acre-ft/yr, adjusted for storage in Long Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,700 ft³/s Jan. 19, 1974, gage height, 78.40 ft; maximum recorded gage height, 78.66 ft May 24, 1948; minimum daily discharge, 114 ft³/s Sept. 2, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,000 ft³/s Mar. 12, gage height, 70.20 ft; minimum, 280 ft³/s Aug. 5; minimum gage height, 50.22 ft Aug. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1810	3460	4180	6230	9990	16300	14200	13600	17200	6300	3240	2350
2	2260	3720	4570	6240	8760	16300	14600	13400	17400	6220	2800	2370
3	2250	3310	4420	6260	7300	16800	14600	13400	17000	6180	3680	2280
4	2280	3470	3950	6220	6760	16500	14700	12600	16100	5590	3560	2720
5	3310	4550	4790	6970	6690	18900	14800	12800	14400	5140	3110	2500
6	2990	4580	5040	8290	6920	19800	14600	13300	14900	4780	2420	2380
7	2620	3760	4660	9830	6880	20000	14000	13400	14500	5310	2680	1220
8	2710	3600	4600	9500	6920	19900	13800	13900	14000	5140	2540	1620
9	2660	3630	4800	8820	7320	20200	13500	14000	12400	5000	2860	1780
10	3320	3550	4720	8360	7420	21500	12600	14000	12300	5390	2840	2310
11	2880	4310	4990	11400	6980	21400	12300	14000	12200	5080	2890	2530
12	2480	3890	4740	13100	7620	22600	11800	14000	8900	4050	3080	1790
13	2750	3960	5180	12700	8130	23000	11200	13600	5320	4000	3310	2220
14	2910	3940	5440	12700	8000	23000	11200	13800	4640	5470	2800	2670
15	3180	3960	6050	12300	7610	22200	11300	13900	5110	6560	2440	2950
16	3090	4460	6300	10800	8140	21400	11000	13000	5070	6020	3070	2600
17	3510	3490	6010	10700	10200	21200	10500	12700	4700	6440	3290	2870
18	3190	4440	6070	9980	12100	20300	9400	12300	4790	6470	2730	2370
19	2780	3570	6180	9140	14200	17700	9020	12100	5160	6100	2340	2560
20	2740	3930	6180	7410	15200	18500	9540	12600	5160	6110	2380	2640
21	2950	4200	6210	7070	15100	17800	9660	12400	5190	6110	2190	2610
22	3210	4770	7120	8000	15800	15500	9690	12500	5190	5640	2420	2640
23	2950	4550	6440	8050	16000	14900	10400	12400	5200	4660	2050	2720
24	3370	4050	6230	7240	15600	14800	11300	12500	5920	4410	1850	2740
25	3380	3990	6310	6790	15600	14100	12500	12800	6280	4490	1950	2970
26	3190	3320	6250	7510	16100	13400	13400	13400	5850	3690	2320	3190
27	2900	4210	6300	7110	16300	13700	14600	14800	5160	3390	2890	2830
28	3450	4440	6270	7160	16300	13300	14700	16400	6650	3860	3240	2990
29	3590	4050	6320	8310	---	12900	14500	16600	6800	3510	3380	3190
30	3050	3900	6270	9580	---	14400	14300	16300	6460	3590	2520	3000
31	3710	---	6270	10400	---	14600	---	16700	---	3790	2690	---
TOTAL	91470	119060	172860	274170	299940	556900	373710	423200	269950	158490	85560	75610
MEAN	2951	3969	5576	8844	10710	17960	12460	13650	8998	5113	2760	2520
MAX	3710	4770	7120	13100	16300	23000	14800	16700	17400	6560	3680	3190
MIN	1810	3310	3950	6220	6690	12900	9020	12100	4640	3390	1850	1220
AC-FT	181400	236200	342900	543800	594900	1105000	741300	839400	535400	314400	169700	150000
MEAN†	3018	3978	5565	8851	10703	17958	12458	13652	9023	5092	2750	2548
AC-FT†	185600	236700	342200	544200	594400	1104200	741300	839400	536900	313100	169100	151600

CAL YR 1982 TOTAL 3423100 MEAN 9378 MAX 40900 MIN 1070 AC-FT 6790000 MEAN† 9379 AC-FT† 6790300
WTR YR 1983 TOTAL 2900920 MEAN 7948 MAX 23000 MIN 1220 AC-FT 5754000 MEAN† 7954 AC-FT† 5758800

† Adjusted for change in contents, in Long Lake.

12433000 SPOKANE RIVER AT LONG LAKE, WA--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 47°50'26", long 117°51'11", in SE¼NW¼ sec.14, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, on right bank 0.7 mi downstream from Long Lake Dam, and 13 mi north of Reardan.

PERIOD OF RECORD.--Water years 1959 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1973 to September 1981.
WATER TEMPERATURES: July 1959 to September 1962, October 1966 to September 1970, March 1973 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1982											
27...	1100	3850	171	8.3	11.5	2.6	8.7	83	<1	<1	80
JAN , 1983											
21...	1015	6400	88	7.9	4.0	18	12.4	100	<1	32	36
MAR											
22...	1015	6110	82	7.8	6.0	4.7	12.8	109	K1	K8	33
MAY											
19...	1045	13000	87	8.2	12.0	2.6	11.7	114	K2	<1	36
JUL											
07...	1200	5000	125	7.9	17.0	1.0	8.5	93	K1	<1	53
SEP											
21...	1400	2510	181	7.8	16.5	1.1	8.2	88	<1	K3	87

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT , 1982											
27...	2	20	7.3	4.0	10	.2	1.6	78	12	2.8	.10
JAN , 1983											
21...	2	9.3	3.1	2.5	13	.2	1.3	34	10	1.6	<.10
MAR											
22...	0	8.7	2.7	2.4	13	.2	1.1	32	9.8	1.3	<.10
MAY											
19...	2	9.4	3.1	2.4	12	.2	1.0	34	8.3	1.3	<.10
JUL											
07...	0	13	5.0	2.8	10	.2	1.1	55	8.2	1.7	<.10
SEP											
21...	5	21	8.3	3.9	9	.2	1.4	82	10	2.7	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1982											
27...	8.8	95	100	.13	988	.54	.130	.90	<.010	<.010	<.010
JAN , 1983											
21...	11	48	60	.07	829	.56	.100	.30	.090	.040	.030
MAR											
22...	11	41	56	.06	676	.25	.070	.60	.040	.020	<.010
MAY											
19...	9.6	52	56	.07	1830	.14	.080	.50	.010	.030	.020
JUL											
07...	8.6	75	74	.10	1010	.36	.100	.40	.030	.020	.010
SEP											
21...	8.3	108	100	.15	732	.59	.050	.60	.020	<.010	<.010

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12433000 SPOKANE RIVER AT LONG LAKE, WA--Continued

WATER QUALITY DATA, OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
OCT , 1982											
27...	<10	2	29	<.5	<1	<1	<3	5	4	6	15
JAN , 1983											
21...	60	1	27	<.5	2	<1	<3	3	52	21	16
MAR											
22...	--	--	--	--	--	--	--	--	--	--	--
MAY											
19...	10	1	20	<.5	2	<1	<3	2	33	12	9
JUL											
07...	--	--	--	--	--	--	--	--	--	--	--
SEP											
21...	<10	2	29	<.5	<1	<1	<3	3	<3	12	<4

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1982											
27...	18	.3	<10	3	<1	<1	63	<6	26	9	94
JAN , 1983											
21...	1	.5	<10	<1	<1	<1	37	<6	70	23	397
MAR											
22...	--	--	--	--	--	--	--	--	--	13	214
MAY											
19...	4	<.1	<10	1	<1	<1	35	<6	61	6	211
JUL											
07...	--	--	--	--	--	--	--	--	--	9	122
SEP											
21...	1	.5	<10	2	<1	<1	68	<6	7	3	20

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DISSOLVED (UG/L AS U)	URANIUM DISSOLVED, EXTRACTION (UG/L)
MAY , 1983										
19...	1045	1.4	.7	1.2	.5	1.1	.5	.06	--	.21
SEP										
21...	1400	<4.3	<.4	2.0	.6	1.7	.5	.05	1.5	--

12435500 FEEDER CANAL AT GRAND COULEE, WA

LOCATION.--Lat 47°57'05", long 118°59'40", on line between secs.1 and 2, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, on left bank at Grand Coulee, 0.2 mi downstream from headworks structure, and 0.5 mi southwest of Grand Coulee Dam.

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Recording flowmeters and water-stage recorder on rated pumps. Datum of gage is 1,500.00 ft Bureau of Reclamation datum, adjustment of 1937. May 1, 1952, to Jan. 10, 1978, at datum 50.00 ft higher. Jan. 11, 1978, to Feb. 22, 1981, nonrecording gage at datum 1,500.00 ft lower. Water-stage recorder for Franklin D. Roosevelt Lake (see sta 12436000) also used to determine head. May 1, 1952, to Oct. 13, 1960, auxiliary gage 0.6 mi downstream from base gage at same datum.

REMARKS.--Water is pumped (since May 1951) from Franklin D. Roosevelt Lake, through a lift of about 280 ft, into Feeder Canal for a distance of 2 mi, into Banks Lake. From Banks Lake it is distributed through a system of canals to the Columbia Basin project. On Dec. 23, 1974, two pump generators were added, and in 1983, two additional pump generators were installed, which can also generate power during peak demand periods in winter months by returning water from Banks Lake via the Feeder Canal to Franklin D. Roosevelt Lake. Daily discharge computed from relation between discharge, head and pump operation.

COOPERATION.--Discharge records furnished by U.S. Bureau of Reclamation; five discharge measurements made by Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 13,600 ft^3/s Feb. 17-24, 1981; minimum daily discharge, 1,920 ft^3/s Feb. 24, 1975, reverse flow from Banks Lake.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 9,470 ft^3/s June 9; minimum daily discharge, 1,850 ft^3/s Jan. 29, reverse flow from Banks Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3200	.00	.00	0	202	.00	2710	5870	6650	6960	5760	4790
2	3200	.00	.00	0	0	.00	2700	5870	7090	6370	4800	4780
3	3200	.00	.00	0	388	.00	2690	5870	8050	6390	4810	4780
4	3200	.00	.00	0	-23	.00	2680	5900	8850	6400	4820	4790
5	3200	.00	.00	0	0	.00	2660	5900	8900	6420	4820	4790
6	3200	.00	.00	0	0	.00	2640	5900	8510	4840	4820	4000
7	3200	.00	.00	0	0	.00	2630	5920	8960	4810	4820	3200
8	3190	.00	.00	0	0	.00	2610	5980	9180	4760	4810	3200
9	3190	.00	.00	0	100	.00	2590	6020	9470	6420	4810	3180
10	3200	.00	.00	0	-30	.00	2560	6020	9130	6420	4810	3200
11	3190	.00	.00	0	162	.00	2540	6030	9070	6420	4800	3210
12	3190	.00	.00	0	0	.00	2570	6030	9110	6410	4810	3210
13	3190	.00	.00	-26	0	.00	2500	6060	9150	6400	4820	3150
14	3430	.00	.00	-26	105	.00	2480	6080	9160	6390	4830	2060
15	3180	.00	.00	0	-72	.00	2460	6110	8670	6400	4840	3130
16	3180	.00	.00	0	64	.00	2450	6160	9200	6400	4840	2790
17	3180	.00	.00	97	0	.00	1190	6190	9220	6400	4840	3210
18	3180	.00	.00	60	7	.00	.00	6190	9190	6400	4830	3210
19	3180	.00	.00	211	0	.00	.00	6190	9310	6410	4820	3210
20	3170	.00	.00	-13	0	.00	.00	6230	9340	6420	4820	3180
21	2250	.00	.00	-110	-5	.00	1310	6310	9260	6420	4810	3150
22	1590	.00	.00	0	0	.00	3600	6350	9370	6400	4800	1980
23	1590	.00	.00	0	0	.00	3570	6350	9390	6410	4790	1470
24	1590	.00	.00	-99	0	.00	3380	6440	9400	6420	4790	1610
25	1590	.00	.00	-150	0	.00	3500	6500	9410	6420	4790	1610
26	1590	.00	.00	-363	0	.00	2660	6570	9430	6540	4790	1200
27	1590	.00	.00	-300	0	.00	4320	6640	8460	6420	4800	1540
28	1600	.00	.00	-1390	0	.00	5900	6830	7880	6410	4810	2030
29	1600	.00	.00	-1850	---	.00	5900	6920	7900	6410	4820	2190
30	1590	.00	.00	0	---	.00	5880	7000	7920	6410	4820	1420
31	1590	---	.00	0	---	.00	---	7130	---	6410	4810	---
TOTAL	82220	.00	.00	-3959	899	.00	82680.00	193560	264630	194510	150160	89270
MEAN	2652	.00	.00	-128	32.1	.00	2756	6244	8821	6275	4844	2976
MAX	3430	.00	.00	211	388	.00	5900	7130	9470	6960	5760	4790
MIN	1590	.00	.00	-1850	-72	.00	.00	5870	6650	4760	4790	1200
AC-FT	163100	.00	.00	-7850	1780	.00	164000	383900	524900	385800	297800	177100

CAL YR 1982 TOTAL 1206421.00 MEAN 3305 MAX 9090 MIN .00 AC-FT 2393000
WTR YR 1983 TOTAL 1053969.60 MEAN 2888 MAX 9470 MIN -1850 AC-FT 2091000

BEST COPY [illegible]

12436000 FRANKLIN D. ROOSEVELT LAKE AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'20", long 118°59'02", near center of sec.1, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, in block 12 of Grand Coulee Dam on Columbia River, and at mile 596.6.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1943, published as Columbia River Reservoir at Grand Coulee Dam.

REVISED RECORDS.--WSP 1286: 1942, 1945(M). WSP 1316: 1942 (May monthend contents). WSP 1933: Drainage area. WDR WA-73-1: 1965, 1967. WDR WA-75-1: 1974 monthend contents.

GAGE.--Water-stage recorder. Datum of gage is Bureau of Reclamation datum, adjustment of 1937, or 1.425 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Apr. 24, 1942, nonrecording gage at site 2,000 ft upstream at same datum.

REMARKS.--Elevations for June 7 to July 11 provided by N.P.D. Reservoir Control Center. Reservoir is formed by concrete dam; construction of dam began in 1934; completed in 1941; storage began early in construction period. Capacity, 5,022,179 acre-ft between elevations, 1,208 ft, proposed lower limit of operation, and 1,288 ft, top of gates. Capacity increased to 5,185,452 acre-ft by use of 2 ft flashboards installed after high-water period each year beginning August 1961. Storage below 1,208 ft, 4,209,207 acre-ft. Figures given herein represent total contents. Water is used for power development and irrigation. Flow is regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversions by Feeder Canal (see sta 12435500) and for irrigation of about 350,000 acres in the United States plus an additional 37,000 acres in Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,586,200 acre-ft July 17, 1942, June 3, 1945, elevation, 1,290.3 ft; maximum elevation, 1,290.36 ft Aug. 6, 1976; minimum contents observed, 16,200 acre-ft Aug. 29, 1938, elevation, 956.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,400,420 acre-ft Feb. 1, elevation, 1,290.07 ft; minimum, 4,692,259 acre-ft Apr. 25, elevation, 1,218.18 ft.

Capacity table dated October 24, 1975 (elevation, in feet, and contents, in acre-ft)
(Prepared by Geological Survey from data furnished by Bureau of Reclamation)

1,210.0	4,301,035	1,270.0	7,864,082
1,230.0	5,308,657	1,291.0	9,477,261
1,250.0	6,501,603		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1289.13	1288.67	1282.10	1281.35	1289.96	1279.69	1242.16	1219.03	1253.93	1285.90	1288.94	1284.20
2	1289.01	1287.82	1282.79	1280.70	1289.67	1278.29	1241.66	1219.11	1255.91	1287.25	1289.10	1283.82
3	1289.30	1287.46	1283.68	1280.29	1289.16	1276.86	1240.90	1219.22	1257.88	1288.55	1289.48	1284.32
4	1289.31	1287.25	1284.60	1280.25	1288.73	1275.48	1240.03	1219.52	1259.73	1289.50	1289.84	1285.19
5	1289.41	1287.00	1285.38	1280.65	1287.58	1274.41	1238.59	1219.28	1261.17	1289.80	1289.63	1285.85
6	1289.31	1287.01	1285.80	1281.86	1286.47	1273.08	1237.83	1219.69	1262.23	1289.55	1289.45	1285.66
7	1289.04	1286.68	1286.05	1284.11	1285.75	1271.80	1236.30	1220.23	1263.00	1289.30	1289.20	1285.96
8	1288.98	1286.25	1286.22	1285.88	1285.11	1270.38	1235.09	1221.53	1263.70	1289.25	1288.86	1285.68
9	1289.08	1285.70	1286.28	1287.74	1284.65	1269.31	1233.69	1221.61	1264.40	1289.40	1288.39	1285.62
10	1289.28	1285.54	1286.21	1288.52	1284.27	1269.32	1232.44	1222.04	1265.50	1289.65	1287.96	1286.04
11	1289.05	1285.23	1287.05	1289.47	1284.57	1269.42	1231.31	1221.87	1267.05	1289.36	1287.84	1286.42
12	1288.77	1284.84	1287.52	1289.71	1284.76	1269.01	1230.24	1222.09	1268.30	1288.72	1288.36	1286.12
13	1288.14	1284.70	1287.49	1289.91	1285.23	1268.46	1229.13	1222.88	1269.20	1288.00	1289.00	1285.60
14	1287.82	1284.70	1287.31	1289.71	1285.45	1267.35	1228.11	1222.99	1269.95	1288.36	1289.65	1285.65
15	1287.34	1284.30	1287.45	1289.69	1285.86	1265.92	1227.27	1224.05	1270.90	1289.20	1289.90	1285.54
16	1287.40	1284.20	1287.34	1289.74	1286.91	1264.36	1227.09	1224.77	1271.70	1288.72	1289.75	1285.65
17	1287.62	1284.25	1287.44	1289.70	1287.61	1262.96	1226.83	1224.96	1272.85	1288.65	1289.55	1286.28
18	1287.32	1284.10	1287.62	1289.62	1288.22	1261.75	1225.86	1225.47	1274.50	1289.04	1289.12	1286.54
19	1287.27	1284.62	1287.32	1289.54	1289.91	1260.32	1224.74	1226.13	1276.15	1289.38	1288.24	1286.20
20	1286.76	1284.90	1286.68	1289.30	1289.76	1258.86	1223.40	1226.85	1277.20	1289.76	1287.39	1286.30
21	1286.55	1284.90	1286.22	1289.33	1289.44	1257.43	1222.08	1228.05	1278.20	1289.18	1286.84	1286.23
22	1286.50	1284.37	1286.39	1289.27	1289.39	1255.90	1220.85	1228.97	1278.90	1289.01	1285.80	1286.02
23	1287.28	1283.73	1286.59	1288.96	1286.99	1254.43	1219.95	1230.40	1279.60	1289.55	1285.62	1286.01
24	1288.32	1282.85	1286.52	1288.91	1285.74	1252.95	1218.57	1231.95	1280.10	1289.78	1285.67	1286.23
25	1288.64	1282.52	1286.60	1288.81	1284.33	1251.29	1219.01	1234.10	1280.75	1289.74	1285.41	1286.81
26	1288.77	1282.25	1286.04	1288.92	1283.21	1249.96	1219.21	1236.60	1281.55	1289.77	1285.82	1286.53
27	1289.24	1281.93	1285.14	1289.02	1282.21	1248.42	1219.05	1239.20	1282.25	1289.57	1286.57	1286.13
28	1289.36	1281.70	1284.45	1288.99	1281.11	1246.82	[illegible]	1241.86	1283.20	1289.33	1287.68	1285.69
29	1289.36	1281.53	1283.41	1289.50	---	1245.41	1219.07	1244.35	1284.55	1289.20	1287.69	1285.52
30	1289.41	1281.53	1282.38	1289.76	---	1244.45	1219.06	1247.48	1285.30	1289.32	1287.09	1284.79
31	1289.36	---	1281.83	1290.04	---	1243.24	---	1250.87	---	1289.40	1285.78	---
MEAN	1288.46	1284.75	1285.74	1287.40	1285.50	1262.49	1228.29	1227.65	1271.32	1289.07	1288.05	1285.75
MAX	1289.41	1288.67	1287.62	1290.04	1289.96	1279.69	1242.16	1250.87	1285.30	1289.80	1289.90	1286.81
MIN	1286.50	1281.53	1281.83	1280.25	1281.11	1243.24	1218.57	1219.03	1253.93	1285.90	1285.41	1283.82
†	9342132	8720625	8743726	9397950	8688378	6078727	4735918	6557418	9015023	9345407	9053149	8974674
‡	-5732	-621507	+23101	+654224	-709572	-2609651	-1342809	+1821500	+2457605	+330384	-292258	-78475

CAL YR 1982......................‡ -294314
WTR YR 1983......................‡ -373190

† Contents, in acre-feet, on last day of month.
‡ Change in contents, in acre-feet.

12436500 COLUMBIA RIVER AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'56", long 118°58'54", in SW¼SE¼ sec.36, T.29 N., R.30 E., Douglas County, Hydrologic Unit 17020005, in pier 3 on west side of bridge on State Highway 155, 3,200 ft downstream from Grand Coulee Dam, 14.2 mi upstream from Nespelem River, and at mile 596.3.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1913 to June 1923 (monthly discharge only), July to December 1923, January 1924 to May 1928 (monthly discharge only), June 1928 to current year. Published as "at Grand Coulee near Nespelem" prior to 1936 and as "at Grand Coulee" 1936-42.

REVISED RECORDS.--WSP 1286: 1942, 1947. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is Bureau of Reclamation datum, adjustment of 1937. June 27 to Dec. 31, 1923, June 12, 1928, to Mar. 31, 1931, nonrecording gage at site 0.5 mi upstream at datum 2.4 ft lower. Apr. 1, 1931, to Dec. 31, 1935, water-stage recorder at site 850 ft downstream at present datum. Since June 12, 1955, auxiliary water-stage recorder 5.3 mi downstream from base gage at datum 1.42 ft lower.

REMARKS.--Records good. Discharge for Nov. 25 to Dec. 10 and Feb. 15 to Sept. 30 provided by N.P.D. Reservoir Control Center. Flow is regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversions by Feeder Canal for Columbia Basin project (see sta 12435500) and for irrigation of about 380,000 acres in the United States and an additional 35,000 acres in Canada.

AVERAGE DISCHARGE.--70 years, 110,300 ft³/s, 79,910,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 637,800 ft³/s June 12, 1948, elevation, 987.90 ft; minimum, 14,900 ft³/s Dec. 17, 1956, elevation, 934.37 ft; minimum daily, 15,300 ft³/s Feb. 1, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 725,000 ft³/s, estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 258,000 ft³/s Mar. 4; maximum elevation, 972.87 ft Mar. 22; minimum daily discharge, 41,500 ft³/s Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60300	100000	79300	90000	132000	186000	150000	137000	112000	85500	164000	132000
2	57100	118000	79700	95600	131000	195000	130000	139000	138000	55100	136000	99200
3	55300	102000	66000	115000	136000	190000	145000	139000	130000	57500	128000	66700
4	68900	93300	66600	110000	144000	194000	147000	134000	120000	73900	131000	56900
5	67600	92200	76400	119000	169000	167000	160000	150000	120000	93500	148000	61400
6	71700	87400	88300	91500	165000	176000	132000	138000	126000	105000	131000	93300
7	76600	94700	95300	55700	148000	180000	136000	137000	132000	118000	131000	79200
8	72000	97400	98700	70200	151000	182000	106000	121000	133000	101000	146000	86600
9	55900	99500	100000	55400	140000	174000	127000	147000	131000	89300	134000	76600
10	56700	98200	98400	96700	139000	128000	147000	139000	118000	93100	134000	58200
11	63400	106000	73300	91200	110000	131000	153000	149000	103000	102000	124000	55400
12	69600	108000	76800	115000	114000	145000	156000	136000	103000	115000	105000	88100
13	82700	78700	93100	125000	110000	146000	154000	124000	112000	113000	107000	86200
14	73600	78900	97000	132000	133000	163000	148000	132000	107000	98000	101000	75200
15	76700	96900	87900	124000	116000	174000	143000	114000	104000	103000	122000	73600
16	59300	86100	82400	116000	96400	196000	121000	129000	98100	170000	135000	78000
17	71200	83500	84400	113000	110000	188000	123000	145000	90000	166000	134000	59200
18	90500	86500	73100	110000	118000	182000	131000	138000	81200	144000	128000	70600
19	87900	74300	87200	109000	74100	197000	131000	133000	77600	143000	126000	93700
20	98500	71700	105000	113000	133000	196000	140000	129000	100000	153000	117000	78300
21	94500	73800	102000	111000	135000	198000	138000	115000	99000	166000	106000	81600
22	84600	96000	72900	123000	174000	207000	137000	120000	113000	150000	127000	91300
23	56300	102000	62400	126000	173000	205000	133000	126000	113000	124000	94500	70700
24	51400	120000	68300	115000	169000	198000	161000	131000	119000	128000	84500	56200
25	87700	99500	56300	125000	180000	212000	139000	127000	107000	153000	90100	41500
26	86000	92300	78000	115000	167000	198000	148000	132000	96200	159000	81400	78800
27	78600	90100	102000	115000	168000	198000	154000	124000	96400	162000	60000	85200
28	84300	85400	97200	122000	183000	203000	147000	125000	91300	167000	49700	84000
29	93700	106000	111000	102000	---	196000	145000	124000	84100	167000	87200	77100
30	84400	101000	111000	110000	---	188000	135000	115000	90600	148000	110000	88600
31	82100	---	100000	121000	---	171000	---	110000	---	146000	137000	---
TOTAL	2304100	2819400	2670000	3332300	3918500	5664000	4217000	4059000	3245500	3848900	3609400	2324400
MEAN	74330	93980	86130	107500	139900	182700	140600	130900	108200	124200	116400	77480
MAX	98500	120000	111000	132000	183000	212000	161000	150000	138000	170000	164000	132000
MIN	51400	71700	56300	55400	74100	128000	106000	110000	77600	55100	49700	41500
AC-FT	4570000	5592000	5296000	6610000	7772000	11235000	8364000	8051000	6437000	7634000	7159000	4610000

CAL YR 1982 TOTAL 45888000 MEAN 125700 MAX 213000 MIN 48400 AC-FT 91013992
WTR YR 1983 TOTAL 42012500 MEAN 115100 MAX 212000 MIN 41500 AC-FT 83332000

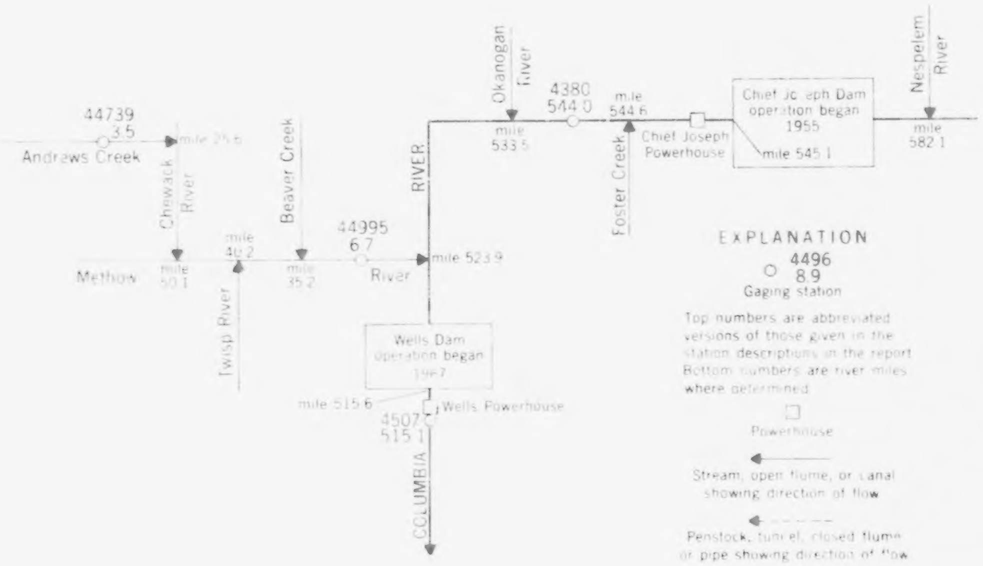
44739
3.5
Andrews Creek
mile 25.6
Chewack River
Beaver Creek
Methow
mile 50.1
mile 40.2
Twisp River
mile 35.2
44995
6.7
River
mile 523.9
RIVER
Okanogan River
mile 533.5
4380
544.0
mile 544.6
Foster Creek
Chief Joseph Powerhouse
Chief Joseph Dam operation began 1955
mile 545.1
Nespelem River
mile 582.1
Wells Dam operation began 1967
mile 515.6
Wells Powerhouse
4507
515.1
COLUMBIA
EXPLANATION
4496
8.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume or pipe showing direction of flow

Figure 23.—Gaging stations in Columbia River basin from Chief Joseph Dam to Wells Dam.

12438000 COLUMBIA RIVER AT BRIDGEPORT, WA

LOCATION.--Lat 48°00'34", long 119°39'51", in SW¼SW¼ sec.14, T.29 N., R.25 E., Douglas County, Hydrologic Unit 17020005, on left bank at Bridgeport, 1.0 mi downstream from Foster Creek, 1.6 mi downstream from Chief Joseph Dam, and at mile 543.9.

DRAINAGE AREA.--75,700 mi², approximately.

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Since May 26, 1967, auxiliary water-stage recorder 4,800 ft upstream from base gage at same datum.

REMARKS.--Records fair. Discharge for Oct. 11, 13-15, 18-20, 25-28, 30, 31, Nov. 1-13, 21, 25, 26, Dec. 10, 11, 13, 24-31, Jan. 1-6, Feb. 19, 22, 23, 25, 27, Mar. 1-3, 5, 6, 16-30, May 30, 31, June 1, 11, 12, 14, 16, 17, 25, 26, July 2, 8-10, 12, 13, 15, Aug. 11-15, 22-29, Sept. 5, 9, 10, 12, 13, 19, 23, and 24 was provided by Corps of Engineers, N.P.D. Reservoir Control Center. Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversion by Feeder canal (see sta 12435500) for Columbia Basin project and for irrigation of about 380,000 acres in the United States and an additional 35,000 acres in Canada.

AVERAGE DISCHARGE.--31 years, 113,600 ft³/s, 82,300,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 495,800 ft³/s June 11, 1961; maximum elevation, 792.20 ft June 7, 1956; minimum observed discharge, 4,200 ft³/s Mar. 22, 1966, elevation, 746.91 ft; minimum daily discharge, 22,300 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 224,000 ft³/s Mar. 22; maximum elevation, 786.72 ft Mar. 22; minimum daily discharge, 31,400 ft³/s Sept. 25; minimum elevation, 770.18 Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57100	100000	74000	88300	154000	200000	150000	142000	104600	78000	154000	133000
2	57900	117000	77900	91600	133000	195000	134000	134000	136000	50000	128000	97900
3	55600	89000	61700	114000	126000	198000	145000	143000	129000	50500	126000	57900
4	69600	93200	60500	108000	142000	196000	141000	139000	121000	68800	131000	50700
5	69000	90900	74300	116000	167000	180000	166000	144000	122000	86200	139000	59200
6	70000	87200	87200	88600	163000	172000	123000	138000	126000	100000	139000	89800
7	72500	94500	91700	55200	150000	179000	138000	129000	135000	112000	131000	76600
8	73600	96300	98900	63800	161000	188000	115000	118000	141000	99800	151000	80100
9		100000	97900	52600	147000	172000	123000	143000	133000	87900	136000	75000
10		97300	100000	95900	131000	133000	147000	148000	117000	88400	131000	53900
11	66[illegible]	105000	67700	90600	102000	128000	148000	140000	99800	114000	125000	47600
12	68400	107000	70900	112000	102000	156000	149000	140000	108000	104000	107000	86800
13	82500	76200	90700	128000	108000	138000	159000	126000	109000	107000	110000	86800
14	71700	79600	91700	128000	132000	156000	157000	130000	105000	100000	102000	68200
15	76900	97500	87800	120000	120000	167000	148000	113000	103000	107000	120000	69400
16	59400	86300	78300	112000	93200	198000	124000	124000	99000	151000	134000	71700
17	73300	83300	78300	112000	109000	191000	115000	131000	90300	167000	134000	53600
18	90400	88000	71100	107000	120000	186000	134000	140000	81600	143000	123000	73000
19	57300	73100	84600	108000	70800	207000	134000	133000	72900	145000	122000	84600
20	97200	68500	101000	110000	129000	199000	148000	129000	94200	155000	116000	69600
21	97000	74400	98100	109000	149000	194000	146000	113000	99400	168000	104000	75300
22	80000	95500	73200	127000	181000	224000	134000	116000	109000	155000	126000	84900
23	57300	104000	63400	117000	176000	203000	127000	119000	112000	117000	97600	65600
24	52900	121000	65300	116000	176000	198000	165000	128000	119000	125000	83700	48900
25	86600	93700	54200	130000	177000	206000	150000	128000	108000	157000	93200	31400
26	85100	92400	75900	114000	169000	197000	139000	128000	95300	166000	72400	69800
27	77700	88400	99000	118000	181000	202000	160000	127000	91100	162000	54300	80800
28	84100	84600	93600	120000	176000	208000	160000	116000	88900	171000	51900	76800
29	92300	108000	108000	97100	---	198000	147000	130000	79600	163000	87800	75100
30	82700	105000	107000	106000	---	193000	146000	115000	83400	162000	107000	85900
31	82200	---	98100	119000	---	180000	---	111000	---	139000	136000	---
TOTAL	2291600	2808900	2583800	3273700	3925000	5762000	4280000	4015000	3212500	3799600	3572900	2179900
MEAN	73920	93630	83350	105600	140200	185900	142700	129500	107100	122600	115300	72660
MAX	97200	121000	108000	130000	181000	224000	166000	148000	141000	171000	154000	133000
MIN	52900	68500	54700	52600	70800	128000	115000	111000	72900	50000	51900	31400
AC-FT	4545000	5571000	5125000	6493000	7785000	11429000	8489000	7964000	6372000	7537000	7087000	4324000

CAL YR 1982 TOTAL 45240100 MEAN 123900 MAX 209000 MIN 47800 AC-FT 89734000
WTR YR 1983 TOTAL 41704900 MEAN 114300 MAX 224000 MIN 31400 AC-FT 82722000

ILABLE

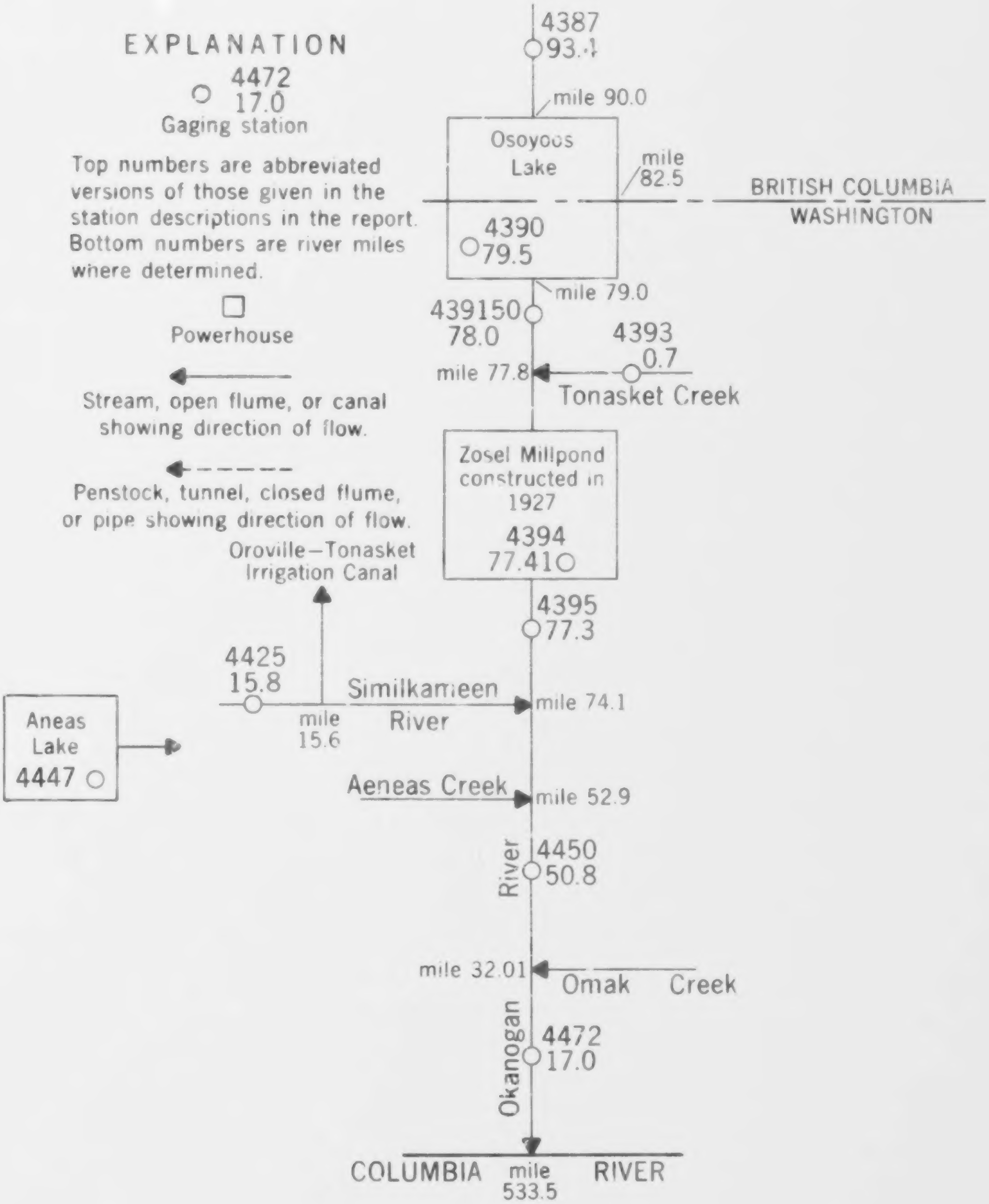
EXPLANATION
4472
17.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
4387
93.4
mile 90.0
Osoyoos Lake
mile 82.5
BRITISH COLUMBIA
WASHINGTON
4390
79.5
mile 79.0
439150
78.0
4393
0.7
mile 77.8
Tonasket Creek
Zosel Millpond constructed in 1927
4394
77.41
Oroville–Tonasket Irrigation Canal
4395
77.3
4425
15.8
Similkameen River
mile 15.6
mile 74.1
Aneas Lake
4447
Aeneas Creek
mile 52.9
4450
50.8
mile 32.01
Omak Creek
Okanogan River
4472
17.0
COLUMBIA RIVER
mile 533.5

Figure 24.—Gaging stations in Okanogan River basin.

12438700 OKANAGAN RIVER NEAR OLIVER, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°06'53", long 119°33'50", approximately 75 ft upstream from drop structure No. 3, 0.8 mi downstream from Testalinden Creek, 4.2 mi south of Oliver, and at mile 93.4.

DRAINAGE AREA.--2,930 mi².

PERIOD OF RECORD.--October 1961 to current year in reports of Geological Survey. March 1944 to December 1948 and April 1952 to September 1961 in reports of Department of Northern Affairs and National Resources, Canada.

GAGE.--Water-stage recorder.

REMARKS.--Records good. Regulation by control dams at outlets of Okanagan and Skaha Lakes. Diversion for irrigation.

COOPERATION.--This station is maintained by Canada under agreement with the United States subsequent to Feb. 14, 1965.

AVERAGE DISCHARGE.--33 years (water years 1945-47, 1953-56, 1958-83), 637 ft³/s, 461,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,130 ft³/s May 27, 1974, gage height, 7.07 ft; minimum, 55.9 ft³/s Jan. 30, 1963, gage height, 0.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 2,890 ft³/s May 23, gage height, 6.81 ft; minimum daily, 452 ft³/s Nov. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	501	530	551	512	1050	1120	2170	2500	1740	2020	1320	1440
2	480	551	590	508	1050	1100	2180	2510	1590	2110	1300	1530
3	477	551	540	508	1050	1130	2160	2540	1470	2140	1290	1520
4	505	537	512	512	1050	1460	2150	2560	1370	2070	1300	1490
5	537	530	523	519	1030	1680	2160	2630	1310	2030	1330	1470
6	533	530	540	579	1040	1720	2150	2710	1320	2010	1330	1330
7	526	526	540	660	1050	1730	2170	2710	1800	2010	1330	766
8	523	523	523	674	1040	1740	2170	2670	1960	2020	1320	597
9	519	519	516	674	1070	1750	2180	2560	2020	2150	1170	551
10	523	523	508	667	1150	1810	2180	2500	2080	2090	678	579
11	526	526	505	653	1120	1870	2180	2520	2230	2070	770	597
12	526	516	505	650	1100	2060	2160	2520	2200	2050	1460	611
13	516	512	505	646	1090	2140	2140	2510	2190	2030	1460	611
14	516	508	505	643	1080	2140	2140	2560	2170	2030	1450	600
15	519	512	519	639	1090	2170	2140	2660	2310	2040	1410	600
16	523	512	519	639	1100	2220	2150	2680	2330	2030	1380	629
17	519	519	516	636	1090	2300	2150	2680	2230	2020	1360	629
18	516	530	508	646	1100	2240	2160	2620	2140	1980	1350	625
19	512	533	508	851	1090	2200	2190	2640	2050	1960	1340	621
20	519	523	508	1000	1080	2200	2220	2700	1980	1980	1340	590
21	523	519	508	1010	1080	2190	2240	2780	1970	1920	1340	583
22	526	508	487	1010	1080	2190	2260	2810	2040	1470	1330	607
23	526	487	466	1000	1080	2190	2320	2740	2080	943	1330	604
24	523	477	477	999	1090	2180	2470	2380	2110	805	1350	597
25	523	459	491	1000	1130	2180	2590	2090	2090	816	1360	593
26	540	452	494	1020	1140	2190	2500	2430	2060	862	1360	583
27	551	466	516	1050	1130	2200	2420	2490	2040	922	1380	586
28	547	477	530	1030	1120	2210	2410	2510	2000	1080	1400	590
29	537	484	519	1030	---	2210	2450	2520	2010	1290	1410	590
30	519	494	508	1050	---	2210	2470	2500	2040	1320	1440	583
31	505	---	505	1050	---	2170	---	2330	---	1330	1440	---
TOTAL	16136	15334	15942	24065	30370	60900	67430	79560	58930	53598	40826	23302
MEAN	521	511	514	776	1085	1965	2248	2566	1964	1729	1317	777
MAX	551	551	590	1050	1150	2300	2590	2810	2330	2150	1460	1530
MIN	477	452	466	508	1030	1100	2140	2090	1310	805	678	551
AC-FT	32010	30410	31620	47730	60240	120800	133700	157800	116900	106300	80980	46220

CAL YR 1982 TOTAL 372351 MEAN 1020 MAX 2450 MIN 294 AC-FT 738600
WTR YR 1983 TOTAL 486395 MEAN 1333 MAX 2810 MIN 452 AC-FT 964800

12439000 OSOYOOS LAKE NEAR OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°57'24", long 119°26'18", in NW¼NE¼ sec.21, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on west shore 1.0 mi north of Oroville, 3.0 mi south of international boundary, and at mile 79.5.

DRAINAGE AREA.--3,132 mi².

PERIOD OF RECORD.--July 1928 to current year.

REVISED RECORDS.--WSP 1346: Drainage area. WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 2, 1928, nonrecording gage, and Sept. 2, 1928, to Nov. 9, 1929, water-stage recorder, 100 ft south of international boundary. Nov. 10, 1929, to Sept. 7, 1930, Mar. 22, 1952, to Sept. 23, 1953, June 25, 1955, to Apr. 11, 1956, nonrecording gage, and Sept. 8, 1930, to Mar. 21, 1952, Sept. 24, 1953, to June 24, 1955, Apr. 12, 1956, to Feb. 7, 1969, water-stage recorder, at site 1.0 mi south of international boundary. All elevations prior to Oct. 1, 1944, at datum 2.39 ft lower. To convert from present datum to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert from present datum to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

REMARKS.--Approximately 44,000 acres are irrigated above station in Canada. Elevation may occasionally be affected by dam at Zosel's mill in Oroville.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 917.11 ft June 2, 3, 1972; minimum, 908.82 ft, present datum, Oct. 14, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 29, 1894, reached an elevation of 918.8 ft plus or minus 0.5 ft, present datum, 1.0 mi below present lake outlet, from floodmark on old Okanogan Hotel Building, documented in 1930 from the diary of Mr. and Mrs. Stansbury, operators of the hotel in 1894.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 914.51 ft May 31; minimum, 910.32 ft Nov. 27.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	910.84	910.47	910.38	910.39	911.36	911.47	912.96	913.65	914.48	913.12	912.09	912.31
2	910.78	910.46	910.40	910.38	911.35	911.45	912.97	913.68	914.35	913.17	912.08	912.36
3	910.73	910.45	910.44	910.38	911.34	911.44	912.97	913.70	914.12	913.23	912.06	912.39
4	910.68	910.46	910.45	910.40	911.33	911.47	912.95	913.72	913.80	913.24	912.06	912.42
5	910.64	910.46	910.45	910.41	911.31	911.56	912.93	913.77	913.48	913.24	912.07	912.42
6	910.63	910.47	910.45	910.42	911.30	911.59	912.93	913.82	913.19	913.22	912.09	912.40
7	910.62	910.46	910.45	910.44	911.30	911.81	912.93	913.93	913.03	913.19	912.11	912.30
8	910.61	910.46	910.43	910.50	911.29	911.91	912.92	914.03	912.98	913.18	912.12	912.08
9	910.59	910.45	910.43	910.53	911.28	912.01	912.94	914.06	912.97	913.23	912.13	911.87
10	910.58	910.44	910.42	910.57	911.30	912.11	912.95	914.02	912.97	913.25	912.05	911.70
11	910.57	910.43	910.40	910.61	911.33	912.21	912.94	913.96	913.04	913.24	911.98	911.59
12	910.57	910.42	910.39	910.63	911.35	912.30	912.94	913.91	913.11	913.24	911.99	911.49
13	910.56	910.42	910.40	910.65	911.35	912.42	912.92	913.85	913.12	913.22	912.07	911.41
14	910.55	910.39	910.39	910.66	911.35	912.52	912.91	913.82	913.15	913.22	912.15	911.36
15	910.54	910.39	910.42	910.68	911.35	912.59	912.90	913.85	913.25	913.20	912.20	911.30
16	910.53	910.39	910.45	910.68	911.35	912.57	912.89	913.90	913.35	913.20	912.21	911.26
17	910.52	910.41	910.47	910.70	911.36	912.74	912.89	913.93	913.42	913.19	912.21	911.21
18	910.50	910.45	910.47	910.71	911.37	912.81	912.90	913.95	913.43	913.17	912.22	911.18
19	910.46	910.48	910.48	910.73	911.36	912.84	912.93	913.94	913.39	913.15	912.19	911.12
20	910.45	910.49	910.47	910.83	911.35	912.85	912.97	913.96	913.33	913.13	912.19	911.08
21	910.43	910.51	910.46	910.95	911.35	912.86	913.03	914.00	913.27	913.11	912.17	911.05
22	910.46	910.45	910.46	911.05	911.35	912.87	913.08	914.06	913.22	913.05	912.15	911.02
23	910.45	910.43	910.45	911.15	911.34	912.89	913.13	914.13	913.20	912.86	912.16	911.01
24	910.45	910.40	910.42	911.22	911.36	912.91	913.25	914.13	913.20	912.60	912.16	910.99
25	910.46	910.38	910.40	911.27	911.39	912.91	913.46	914.00	913.21	912.40	912.18	910.97
26	910.47	910.35	910.40	911.33	911.45	912.90	913.59	913.94	913.21	912.30	912.20	910.95
27	910.48	910.33	910.39	911.45	911.47	912.93	913.64	913.98	913.20	912.17	912.22	910.94
28	910.48	910.34	910.40	911.44	911.47	912.94	913.63	914.05	913.16	912.11	912.23	910.69
29	910.50	910.35	910.40	911.41	---	912.96	913.62	914.15	913.15	912.10	912.25	910.87
30	910.49	910.37	910.40	911.39	---	912.97	913.64	914.28	913.14	912.10	912.28	910.84
31	910.47	---	910.39	911.37	---	912.97	---	914.44	---	912.09	912.30	---
MEAN	910.55	910.43	910.43	910.82	911.35	912.42	913.09	913.96	913.33	912.93	912.15	911.49
MAX	910.84	910.51	910.48	911.45	911.47	912.97	913.64	914.44	914.48	913.25	912.30	912.42
MIN	910.43	910.33	910.38	910.38	911.28	911.44	912.89	913.65	912.97	912.09	911.98	910.84

CAL YR 1982 MEAN 911.36 MAX 913.23 MIN 909.79
WTR YR 1983 MEAN 911.91 MAX 914.48 MIN 910.33

12439150 OKANOGAN RIVER AT BRIDGE STREET, AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°56'20", long 119°25'36", in SW¼NW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 15 ft upstream from Cherry Street Bridge in Oroville, 700 ft upstream from Tonasket Creek, 1.0 mi downstream from Osoyoos Lake, and at mile 78.0.

DRAINAGE AREA.--3,133 m².

PERIOD OF RECORD.--October 1942 to September 1964 (annual maximum and minimum gage heights only published in WSP 1933), October 1964 to current year (gage heights only). April 1939 to November 1944 (fragmentary) and December 1944 to September 1964 gage heights available in file of district office.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Nov. 14, 1944, nonrecording gage and Nov. 15, 1944, to Sept. 30, 1945, water-stage recorder at present site at datum 897.61 ft higher and Oct. 1, 1945, to Sept. 30, 1975, at datum 900.00 ft higher. To convert to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation recorded, 916.99 ft June 2, 1972; minimum recorded, 907.30 ft Mar. 3, 4, 1948.

EXREMES FOR CURRENT YEAR.--Maximum elevation, 914.17 ft May 31; minimum, 909.85 ft Nov. 27.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	910.29	909.97	909.93	909.96	910.82	910.95	912.30	912.97	914.11	912.32	911.37	911.68
2	910.24	909.96	909.95	909.95	910.80	910.93	912.32	912.99	913.90	912.38	911.35	911.73
3	910.18	909.94	909.99	909.96	910.79	910.93	912.32	913.01	913.55	912.43	911.36	911.76
4	910.15	909.95	910.00	909.98	910.79	910.97	912.30	913.02	913.12	912.43	911.41	911.79
5	910.10	909.96	910.01	910.00	910.77	911.04	912.29	913.07	912.75	912.44	911.41	911.79
6	910.08	909.96	910.03	910.00	910.76	911.16	912.28	913.12	912.46	912.42	911.44	911.76
7	910.08	909.95	910.01	910.03	910.76	911.27	912.29	913.21	912.30	912.40	911.46	911.65
8	910.07	909.96	909.98	910.09	910.76	911.36	912.29	913.32	912.24	912.38	911.46	911.44
9	910.05	909.96	909.99	910.13	910.74	911.46	912.29	913.35	912.23	912.42	911.47	911.27
10	910.04	909.95	909.98	910.18	910.75	911.57	912.30	913.30	912.22	912.44	911.41	911.10
11	910.04	909.94	909.95	910.21	910.79	911.66	912.30	913.22	912.28	912.43	911.36	910.99
12	910.05	909.93	909.94	910.23	910.91	911.69	912.30	913.18	912.34	912.43	911.34	910.90
13	910.05	909.93	909.96	910.26	910.81	911.81	912.28	913.12	912.35	912.40	911.42	910.90
14	910.03	909.91	909.95	910.27	910.81	911.89	912.27	913.09	912.37	912.40	911.49	910.88
15	910.02	909.90	909.98	910.29	910.81	911.96	912.26	913.12	912.48	912.39	911.54	910.82
16	910.00	909.90	910.01	910.30	910.82	912.04	912.26	913.16	912.58	912.38	911.56	910.79
17	910.01	909.93	910.04	910.31	910.84	912.10	912.26	913.19	912.63	912.38	911.56	910.74
18	909.99	909.98	910.04	910.32	910.85	912.18	912.28	913.21	912.61	912.36	911.57	910.74
19	909.94	910.01	910.04	910.35	910.83	912.19	912.30	913.19	912.57	912.34	911.54	910.66
20	909.93	910.02	910.04	910.45	910.83	912.19	912.34	913.20	912.53	912.31	911.55	910.62
21	909.90	910.12	910.04	910.56	910.83	912.21	912.41	913.25	912.48	912.29	911.53	910.60
22	909.92	910.01	910.03	910.67	910.82	912.22	912.43	913.31	912.42	912.24	911.52	910.57
23	909.93	909.97	910.02	910.77	910.82	912.24	912.49	913.38	912.41	912.07	911.52	910.55
24	909.93	909.95	909.99	910.83	910.83	912.26	912.59	913.42	912.39	911.82	911.52	910.55
25	909.93	909.92	909.97	910.88	910.88	912.26	912.79	913.36	912.40	911.71	911.55	910.52
26	909.94	909.89	909.97	910.95	910.93	912.25	912.90	913.35	912.41	911.65	911.57	910.51
27	909.96	909.87	909.96	911.00	910.95	912.28	912.95	913.42	912.40	911.53	911.59	910.51
28	909.96	909.88	909.98	910.89	910.95	912.28	912.95	913.50	912.36	911.46	911.60	910.45
29	909.98	909.89	909.98	910.87	---	912.31	912.94	913.64	912.35	911.42	911.62	910.44
30	909.97	909.91	909.97	910.84	---	912.31	912.96	913.87	912.34	911.37	911.65	910.41
31	909.95	---	909.97	910.83	---	912.32	---	914.10	---	911.37	911.67	---
MEAN	910.02	909.95	909.99	910.40	910.82	911.82	912.44	913.28	912.59	912.16	911.50	910.97
MAX	910.29	910.12	910.04	911.00	910.95	912.32	912.96	914.10	914.11	912.44	911.67	911.79
MIN	909.90	909.87	909.93	909.95	910.74	910.93	912.26	912.97	912.22	911.37	911.34	910.41

CAL YR 1982 MEAN 910.85 MAX 912.65 MIN 909.33
WTR YR 1983 MEAN 911.33 MAX 914.11 MIN 909.87

12439300 TONASKET CREEK AT OROVILLE, WA

LOCATION.--Lat 48°56'35", long 119°24'45", in NW¼NE¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank 7 ft downstream from road bridge, 1.0 mi northeast of Oroville, and 0.7 mi above mouth.

DRAINAGE AREA.--60.1 mi².

PERIOD OF RECORD.--March 1967 to current year.

REVISED RECORDS.--WDR WA-73-1: 1972(M).

GAGE.--Water-stage recorder. Altitude of gage is 960 ft, from topographic map.

REMARKS.--Records fair. Two small diversions for irrigation of 45 acres above station.

AVERAGE DISCHARGE.--16 years, 3.25 ft³/s, 0.73 in/yr, 2,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 455 ft³/s Feb. 27, 1973, gage height, 5.47 ft, from rating curve extended above 50 ft³/s on basis of slope-area measurement of peak flow; no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Apr. 12, 1950, was 484 ft³/s at site 0.5 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 16	1230	59	3.37	June 15	1315	56	3.37
Jan. 27	0230	54	3.31	July 2	2000	30	2.94
Mar. 9	1515	37	3.16	July 20	1945	33	2.98
Apr. 9	2215	40	3.11	July 25	1945	63	3.37
Apr. 27	1545	56	3.27	Aug. 11	1015	*195	*4.70
May 8	0130	58	3.32				

Minimum discharge, 0.23 ft³/s Oct. 20, 21; minimum gage height, 2.47 ft Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.6	1.3	.62	.76	9.9	24	35	4.1	9.0	6.8	3.6
2	1.7	1.5	1.1	.68	.74	8.8	30	31	10	21	5.4	2.2
3	1.8	1.4	1.2	.75	.65	11	26	27	16	19	3.7	2.8
4	2.1	1.4	1.4	.82	.62	12	22	27	9.0	13	2.7	2.7
5	2.2	1.3	1.1	.87	.59	11	23	25	7.1	10	2.6	2.2
6	2.1	1.1	1.4	.94	.64	13	25	33	5.9	9.3	3.0	1.3
7	2.0	.90	.90	1.0	.72	16	30	50	4.2	8.6	2.3	1.0
8	2.0	.65	.84	1.1	.85	16	32	51	3.0	12	2.1	1.2
9	2.1	.38	.79	1.1	1.3	21	34	47	2.1	19	1.6	1.1
10	2.0	.80	.74	1.1	2.0	16	33	44	2.5	13	1.9	1.8
11	2.1	.74	.71	1.2	2.2	20	29	34	4.6	11	79	2.9
12	1.8	.87	.70	1.2	4.7	23	28	30	5.1	11	54	2.7
13	1.7	.76	.70	1.2	3.9	23	26	26	3.6	13	36	2.7
14	1.6	1.2	.90	1.2	2.7	20	23	24	2.3	17	6.2	3.0
15	1.5	.66	1.4	1.3	2.7	16	23	30	23	14	9.2	3.4
16	1.7	.75	25	1.4	2.9	15	23	27	23	15	6.0	3.4
17	1.6	.91	2.0	1.4	4.9	16	23	22	15	15	5.9	3.8
18	1.5	1.1	1.1	1.2	5.6	14	23	21	14	12	5.1	4.1
19	1.6	.97	.98	1.2	3.4	13	24	18	12	8.9	4.2	4.1
20	1.3	.95	.95	1.3	4.3	11	24	16	9.7	9.9	4.1	3.6
21	.86	1.4	.85	1.5	4.7	12	25	14	10	12	4.3	3.6
22	1.5	.71	.79	1.5	5.6	13	26	13	10	7.3	3.1	3.7
23	1.9	.62	.71	1.6	9.1	15	28	12	9.7	5.6	2.2	1.6
24	1.6	.56	.65	1.6	13	15	31	10	11	4.8	2.8	3.4
25	1.4	.53	.60	1.6	16	14	35	8.9	8.1	14	2.8	3.4
26	2.5	.60	.55	3.2	15	14	42	8.2	7.4	16	2.8	3.5
27	2.8	.70	.51	11	14	17	50	8.0	7.7	8.6	2.2	3.0
28	2.3	.92	.48	1.4	11	18	45	7.1	7.3	7.8	3.2	2.7
29	2.7	.98	.47	.85	---	24	38	6.2	8.5	7.8	3.3	2.7
30	2.2	1.2	.50	.88	---	26	37	5.2	11	7.8	4.6	3.1
31	1.7	---	.56	.80	---	24	---	4.4	---	6.4	3.9	---
TOTAL	57.76	28.16	51.88	47.51	134.57	497.7	882	715.0	266.9	358.8	277.0	86.3
MEAN	1.86	.94	1.67	1.53	4.81	16.1	29.4	23.1	8.90	11.6	8.94	2.88
MAX	2.8	1.6	25	11	16	26	50	51	23	21	79	4.1
MIN	.86	.38	.47	.62	.59	8.8	22	4.4	2.1	4.8	1.6	1.0
CFSM	.03	.02	.03	.03	.08	.27	.49	.38	.15	.19	.15	.05
IN.	.04	.02	.03	.03	.08	.31	.55	.44	.17	.22	.17	.05
AC-FT	115	56	103	94	267	987	1750	1420	529	712	549	171

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CAL YR 1982   TOTAL   1760.87   MEAN   4.82   MAX   66   MIN   .07   CFSM   .08   IN.   1.09   AC-FT   3490
WTR YR 1983   TOTAL   3403.58   MEAN   9.32   MAX   79   MIN   .38   CFSM   .16   IN.   2.11   AC-FT   6750
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12439400 OKANOGAN RIVER AT ZOSEL MILLPOND, AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°55'55", long 119°25'05", in SE¼SW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank in Oroville, 0.4 mi downstream from Tonasket Creek, 1.6 mi downstream from Osoyoos Lake, and at mile 77.41.

DRAINAGE AREA.--3,195 mi².

PERIOD OF RECORD.--October 1942 to September 1964 (annual maximum and minimum gage heights only, published in WSP 1933), October 1964 to current year (gage heights only). April 1939 to March 1944 (fragmentary) and April 1944 to September 1964 gage heights available in file of district office.

REVISED RECORDS.--WRD WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 27, 1944, nonrecording gage and Mar. 28, 1944, to Sept. 30, 1945, water-stage recorder at present site at datum 897.61 ft higher and Oct. 1, 1945, to Sept. 30, 1975, at datum 900.00 ft higher. To convert to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation recorded, 916.91 ft June 2, 1972; minimum recorded, 905.90 ft Jan. 3, 1959, but may have been lower during period of no gage-height record Mar. 3 or 4, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 913.89 ft May 31; minimum, 909.44 ft Oct. 21.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	909.83	909.54	909.55	909.62	910.16	910.32	911.49	912.09	913.78	911.22	910.40	910.95
2	909.77	909.53	909.57	909.61	910.15	910.30	911.51	912.12	913.45	911.28	910.39	911.00
3	909.72	909.51	909.61	909.62	910.13	910.29	911.51	912.13	912.90	911.32	910.47	911.01
4	909.69	909.52	909.62	909.63	910.13	910.34	911.49	912.15	912.26	911.33	910.62	911.06
5	909.64	909.54	909.63	909.66	910.12	910.40	911.47	912.19	911.76	911.34	910.62	911.07
6	909.64	909.54	909.65	909.66	910.11	910.51	911.46	912.23	911.45	911.32	910.66	911.04
7	909.63	909.53	909.64	909.69	910.11	910.62	911.47	912.34	911.30	911.30	910.68	910.89
8	909.62	909.54	909.60	909.76	910.11	910.71	911.48	912.44	911.23	911.28	910.67	910.67
9	909.60	909.54	909.61	909.79	910.10	910.80	911.48	912.45	911.21	911.32	910.68	910.59
10	909.59	909.53	909.61	909.84	910.11	910.90	911.49	912.39	911.18	911.34	910.62	910.42
11	909.60	909.51	909.57	909.87	910.15	910.94	911.49	912.30	911.23	911.33	910.62	910.32
12	909.60	909.50	909.57	909.90	910.16	910.89	911.49	912.25	911.29	911.32	910.56	910.24
13	909.60	909.51	909.59	909.92	910.16	911.00	911.47	912.19	911.29	911.30	910.64	910.39
14	909.59	909.49	909.57	909.94	910.16	911.08	911.46	912.17	911.32	911.30	910.70	910.42
15	909.57	909.48	909.61	909.95	910.17	911.14	911.45	912.18	911.42	911.28	910.75	910.37
16	909.55	909.48	909.64	909.96	910.18	911.21	911.45	912.22	911.52	911.28	910.77	910.35
17	909.56	909.52	909.68	909.98	910.20	911.29	911.45	912.24	911.54	911.27	910.78	910.30
18	909.55	909.57	909.68	909.98	910.21	911.39	911.46	912.25	911.49	911.25	910.80	910.31
19	909.50	909.61	909.68	910.00	910.19	911.36	911.49	912.23	911.45	911.23	910.77	910.23
20	909.46	909.63	909.68	910.10	910.19	911.37	911.53	912.24	911.40	911.21	910.79	910.19
21	909.45	909.73	909.68	910.22	910.20	911.39	911.59	912.29	911.35	911.19	910.77	910.18
22	909.48	909.61	909.68	910.32	910.18	911.40	911.62	912.36	911.31	911.14	910.77	910.15
23	909.49	909.58	909.67	910.41	910.18	911.42	911.65	912.46	911.31	910.98	910.77	910.14
24	909.49	909.55	909.64	910.47	910.20	911.43	911.75	912.55	911.28	910.74	910.77	910.13
25	909.50	909.53	909.61	910.51	910.25	911.44	911.94	912.58	911.30	910.82	910.80	910.11
26	909.50	909.49	909.62	910.58	910.30	911.43	912.05	912.68	911.32	910.85	910.83	910.10
27	909.54	909.47	909.62	910.51	910.32	911.45	912.08	912.80	911.31	910.73	910.85	910.11
28	909.53	909.49	909.63	910.23	910.32	911.45	912.08	912.92	911.27	910.66	910.86	910.05
29	909.56	909.50	909.63	910.21	---	911.49	912.07	913.13	911.26	910.55	910.88	910.05
30	909.55	909.52	909.63	910.18	---	911.50	912.08	913.51	911.24	910.40	910.92	910.02
31	909.52	---	909.62	910.17	---	911.50	---	913.80	---	910.41	910.94	---
MEAN	909.58	909.54	909.63	910.01	910.18	911.06	911.62	912.45	911.58	911.11	910.71	910.43
MAX	909.83	909.73	909.68	910.58	910.32	911.50	912.08	913.80	913.78	911.34	910.94	911.07
MIN	909.45	909.47	909.55	909.61	910.10	910.29	911.45	912.09	911.18	910.40	910.39	910.02

CAL YR 1982 MEAN 910.26 MAX 912.05 MIN 908.75
WTR YR 1983 MEAN 910.66 MAX 913.80 MIN 909.45

VAILABLE

12439500 OKANOGAN RIVER AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°55'51", long 119°25'09", in SE¼SW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank in Oroville, 20 ft downstream from Burlington Northern trestle, 0.5 mi downstream from Tonasket Creek, 1.7 mi downstream from Osoyoos Lake, 3.2 mi upstream from Similkameen River, and at mile 77.3.

DRAINAGE AREA.--3,195 mi^2.

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WRD WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 26, 1944, nonrecording gage at Zosel milldam 200 ft upstream, Oct. 26, 1944, to Mar. 6, 1948, water-stage recorder on railroad trestle 20 ft upstream, and Mar. 7, 1948, to Sept. 30, 1981, at present site, all at datum 900.00 ft higher. Auxiliary water-stage recorder 0.5 mi downstream at National Geodetic Vertical Datum of 1929, used during high-water periods. May 15, 1946, to Apr. 9, 1948, nonrecording gage at same site, and Apr. 10, 1948, to Sept. 30, 1981, at present site, both at datum 900.00 ft higher. To convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

REMARKS.--Records excellent. Diversions made to irrigate approximately 44,000 acres in Canada and minor diversions in the United States above station. Natural regulation in several large lakes and artificial regulation in Okanagan Lake 46.7 mi upstream for flood control and irrigation; also regulated by Zosel milldam at Oroville, 200 ft above gage.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--41 years, 690 ft^3/s, 499,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,730 ft^3/s June 14, 1972; maximum gage height, 16.89 ft June 2, 1972, at datum then in use (backwater from Similkameen River); minimum daily discharge, 2,270 ft^3/s reverse flow May 29, 1948; minimum gage height, 3.98 ft Mar. 1, 1948, at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,160 ft^3/s May 8; maximum elevation, 913.64 ft May 31 (backwater from Similkameen River); minimum discharge, 507 ft^3/s Nov. 27, elevation, 906.66 ft June 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	675	561	531	538	1180	1270	2310	2860	2200	2020	1330	1380
2	656	557	538	535	1180	1270	2320	2890	2410	2060	1320	1410
3	634	552	550	538	1160	1260	2330	2910	2590	2090	1280	1420
4	617	556	556	542	1160	1290	2320	2920	2620	2090	1240	1440
5	601	560	557	549	1160	1330	2320	2950	2470	2080	1240	1440
6	599	561	564	552	1140	1410	2320	3000	2240	2070	1260	1430
7	596	557	560	560	1140	1480	2330	3090	2090	2050	1270	1410
8	591	562	546	580	1140	1550	2340	3140	2030	2030	1270	1300
9	586	561	551	592	1140	1610	2350	3140	2020	2060	1270	1160
10	585	556	551	610	1140	1670	2360	3090	2010	2070	1240	1080
11	584	551	538	617	1170	1770	2370	3030	2050	2060	1200	1030
12	586	545	53[illegible]	630	1180	1860	2370	2980	2110	2050	1210	982
13	586	546	544	638	1180	1940	2360	2930	2150	2040	1240	885
14	580	534	537	647	1180	2000	2360	2910	2160	2050	1290	837
15	575	533	54[illegible]	651	1180	2050	2350	2950	2230	2040	1320	813
16	571	533	560	656	1180	2100	2360	2980	2290	2030	1320	802
17	575	543	570	661	1200	2130	2370	3000	2330	2030	1320	781
18	568	555	569	663	1200	2160	2380	3020	2360	2010	1330	784
19	551	562	569	676	1190	2190	2400	3000	2310	1990	1300	752
20	545	568	569	713	1190	2190	2470	3020	2220	1980	1310	739
21	535	602	569	762	1190	2210	2480	3030	2160	1960	1300	729
22	545	559	565	808	1190	2220	2510	3000	2110	1930	1290	720
23	546	547	561	852	1190	2240	2550	3060	2100	1810	1290	709
24	547	537	549	882	1200	2250	2630	3030	2090	1650	1290	706
25	550	528	541	903	1230	2250	2770	2810	2100	1470	1300	699
26	551	516	544	934	1260	2250	2850	2580	2090	1380	1320	695
27	561	511	540	1110	1270	2280	2870	2520	2060	1310	1330	698
28	560	512	540	1220	1270	2280	2850	2510	2040	1270	1330	675
29	569	519	542	1210	---	2310	2830	2400	2040	1290	1350	672
30	563	525	541	1200	---	2310	2850	2170	2040	1330	1360	656
31	556	---	541	1190	---	2320	---	2040	---	1330	1370	---
TOTAL	17944	16409	17076	23219	33190	59450	74240	88960	65740	57630	40090	28834
MEAN	579	547	551	749	1185	1918	2475	28[illegible]	2191	1859	1293	961
MAX	675	602	570	1220	1270	2320	2870	3140	2620	2090	1370	1440
MIN	535	511	531	535	1140	1260	2310	2040	2010	1270	1200	656
AC-FT	35590	32550	33870	46050	65830	117900	147300	176500	130400	114300	79520	57190

CAL YR 1982 TOTAL 391651 MEAN 1073 MAX 2430 MIN 173 AC-FT 776800
WTR YR 1983 TOTAL 522782 MEAN 1432 MAX 3140 MIN 511 AC-FT 1037000

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA
(International gaging station)

LOCATION.--Lat 48°59'05", long 119°37'02", in NW¼ sec.7, T.40 N., R.26 E., Okanogan County, Hydrologic Unit 17020007, on left bank 1,000 ft upstream from Oroville-Tonasket Irrigation District canal intake, 1.6 mi northeast of Nighthawk, 3.8 mi downstream from Palmer Creek, and at mile 15.8.

DRAINAGE AREA.--3,550 mi², approximately.

PERIOD OF RECORD.--May 1911 to current year (prior to September 1928, mean monthly discharge included Oroville-Tonasket Irrigation District canal). Published as "near Oroville" 1911-28. Water temperatures January 1949 to September 1950, November 1961 to September 1970, at site 1.7 mi upstream.

REVISED RECORDS.--WSP 1183: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,137.70 ft National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Sept. 11, 1928, staff gages at sites 7 mi downstream (below Oroville-Tonasket Irrigation District canal) at various datums.

REMARKS.--Records excellent. Flow at high stages regulated by natural diversion into and release from Palmer Lake. Several small diversions above station for irrigation of about 2,900 acres in the United States in 1946 and approximately 10,500 acres in Canada in 1957. National Weather Service satellite telemeter at station.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--72 years, 2,302 ft³/s, 1,668,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,800 ft³/s June 1, 1972; maximum gage height, 18.78 ft May 31, 1972; minimum discharge, 65 ft³/s Jan. 3, 1974, gage height, 1.59 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,500 ft³/s May 31, gage height, 12.91 ft; minimum, 375 ft³/s Jan. 1, gage height, 2.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	928	722	385	718	810	1100	5340	19000	4060	2050	870
2	1070	912	698	418	700	810	1100	5650	17200	3940	2020	944
3	1040	873	673	482	679	810	1090	5880	14900	4370	1910	1200
4	1120	859	689	567	627	810	1080	5920	12700	3930	1790	1170
5	1100	866	1190	619	563	803	1070	6040	11000	3580	1690	1050
6	1040	859	1300	611	553	789	1080	6440	9870	3430	1580	972
7	999	852	1110	616	594	796	1150	6690	9360	3390	1490	914
8	996	824	996	661	633	789	1220	6510	9230	3230	1420	879
9	994	761	850	728	669	803	1290	6220	9100	3330	1390	860
10	973	664	858	821	644	852	1290	5850	8410	3290	1400	848
11	978	610	722	960	641	984	1290	5610	8040	3030	1550	875
12	985	604	636	1100	655	1100	1250	5630	7170	3000	1910	1070
13	974	622	634	1250	648	1140	1210	5760	6470	3890	1830	1150
14	945	604	752	1100	660	1140	1200	6080	5980	3890	1610	1030
15	923	598	801	988	664	1130	1200	6390	6120	4170	1450	949
16	908	618	842	897	658	1110	1270	6370	6440	3870	1340	898
17	895	688	833	869	658	1090	1290	6510	5870	3580	1260	856
18	893	793	808	869	652	1060	1400	6580	6270	3470	1190	830
19	903	785	755	866	677	1070	1610	6640	5770	3240	1120	832
20	857	765	714	846	670	1060	1970	7060	5120	3120	1070	836
21	817	733	706	843	664	1060	2400	8540	4730	3190	1020	824
22	824	565	719	828	664	1060	2770	10100	4500	3030	984	813
23	831	610	676	809	670	1070	3070	11200	4360	2790	947	803
24	1100	427	592	785	698	1080	3610	12600	4630	2730	916	784
25	1100	400	588	771	768	1060	4550	13900	4850	2900	911	763
26	1060	411	560	782	824	1040	4740	15000	4340	2920	956	742
27	1060	551	540	835	824	1060	4580	15400	4190	2740	928	716
28	1100	666	533	807	817	1060	4460	15900	3990	2560	914	699
29	1050	699	532	772	---	1060	4500	16900	3880	2440	897	697
30	1000	717	463	745	---	1060	4760	18900	4350	2280	891	689
31	944	---	418	732	---	1090	---	20200	---	2140	888	---
TOTAL	30599	20864	22910	24363	18892	30676	64540	281810	227840	101530	41322	26563
MEAN	987	695	739	786	675	990	2151	9091	7595	3275	1333	885
MAX	1120	928	1300	1250	824	1140	4760	20200	19000	4370	2050	1200
MIN	817	400	418	385	553	789	1070	5340	3880	2140	888	689
AC-FT	60690	41380	45440	48320	37470	60850	128000	559000	451900	201400	81960	52690

CAL YR 1982 TOTAL 931944 MEAN 2553 MAX 16400 MIN 170 AC-FT 1849000
WTR YR 1983 TOTAL 891909 MEAN 2444 MAX 20200 MIN 385 AC-FT 1769000

12444700 AENEAS LAKE NEAR TONASKET, WA

LOCATION.--Lat 48°40'32", long 119°30'35", in SE¼SW¼ sec.25, T.37 N., R.26 E., Okanogan County, Hydrologic Unit 17020006, at Mr. R. C. Wolfe's residence on south shore 4.0 mi southwest of Tonasket.

DRAINAGE AREA.--32.4 mi².

PERIOD OF RECORD.--February 1964 to current year (fragmentary) (discontinued).

GAGE.--Nonrecording gage. Datum of gage is 1,346 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 25, 1978, recording or nonrecording gages at several locations near present site, all at present datum.

REMARKS.--Pumping from lake and nearby ground-water wells during irrigation season. Diversion from Okanogan River into lake by pumping during irrigation season beginning June 1970.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 13.39 ft May 19, 1983; minimum observed, -10.68 ft Oct. 10, 16, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 13.39 ft May 19; minimum, 5.47 ft Oct. 2.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	6.49	---	7.42	9.53	---	12.63	---	---	---
2	5.47	5.77	---	---	---	---	---	---	---	12.12	---	10.25
3	---	---	---	---	---	7.46	---	12.25	---	---	---	---
4	---	---	6.20	6.52	---	---	---	---	12.42	---	---	---
5	5.48	---	---	6.52	7.01	7.49	---	---	---	---	---	---
6	---	5.83	---	---	---	---	10.21	---	---	12.15	---	10.38
7	---	---	---	---	---	---	---	12.60	---	---	---	---
8	---	---	6.22	---	---	7.56	---	---	12.32	---	---	---
9	5.51	5.83	---	6.62	---	---	10.55	12.71	---	12.09	10.83	---
10	---	---	---	---	---	---	---	---	12.15	---	---	10.42
11	---	---	6.22	---	---	7.95	---	---	---	---	10.94	---
12	5.53	---	6.22	6.67	---	---	10.83	---	---	---	---	---
13	---	5.86	---	---	7.08	7.96	---	---	12.14	---	---	10.54
14	---	---	---	---	---	---	---	---	---	12.05	---	---
15	---	---	6.28	---	---	---	---	---	---	---	10.85	---
16	5.57	---	---	---	---	8.08	11.07	13.20	---	---	---	---
17	5.58	5.95	---	---	7.20	---	---	---	12.04	---	---	10.70
18	---	---	---	6.71	---	---	---	---	---	---	---	---
19	---	---	6.44	---	---	---	11.22	13.39	---	11.79	---	---
20	---	6.03	---	---	---	---	---	---	---	---	---	10.76
21	---	---	---	---	7.24	8.25	---	---	12.19	---	10.46	---
22	---	---	---	6.79	---	---	---	---	---	---	---	---
23	5.68	---	---	---	---	---	11.50	---	---	---	---	---
24	---	6.03	6.50	---	7.31	8.40	---	---	12.26	---	---	10.89
25	---	---	---	6.85	---	---	---	13.24	---	11.50	10.47	---
26	5.75	6.05	---	---	7.40	8.48	11.69	---	---	---	---	---
27	---	---	6.50	---	---	---	---	13.06	---	---	---	10.95
28	---	---	---	---	7.42	--	---	---	12.14	---	---	---
29	5.75	---	---	---	---	8.89	11.96	---	---	---	---	---
30	---	6.13	---	6.98	---	---	---	---	---	---	10.21	---
31	---	---	---	---	---	---	---	---	---	---	10.22	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

AVAILABLE

12445000 OKANOGAN RIVER NEAR TONASKET, WA

LOCATION.--Lat 48°37'57", long 119°27'38", in lot 3, sec.8, T.36 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 1,000 ft upstream from Chewiliken Creek, 5.2 mi south of Tonasket, and at mile 50.8.

DRAINAGE AREA.--7,260 mi², approximately.

PERIOD OF RECORD.--April 1929 to current year.

REVISED RECORDS.--WSP 862: 1937. WSP 1316: 1934(M), 1938(M). WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 860.78 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Diversions above station for irrigation of about 10,700 acres in the United States and 55,000 acres in Canada. Flow affected by regulation of Okanagan and Skaha Lakes and by natural storage in other lakes.

AVERAGE DISCHARGE.--54 years, 2,966 ft³/s, 2,149,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,700 ft³/s June 2, 1972, gage height, 22.54 ft; minimum recorded, 126 ft³/s Sept. 5, 1931, gage height, 3.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,400 ft³/s June 1, gage height, 16.11 ft³/s; minimum daily, 900 ft³/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1770	1540	1280	900	1910	2150	3510	7660	22300	6250	3390	2110
2	1740	1530	1270	1000	1880	2130	3570	8100	21400	6080	3290	2160
3	1680	1510	1270	1100	1850	2120	3540	8180	19700	6290	3200	2330
4	1650	1470	1260	1150	1820	2130	3500	8200	17400	6340	3030	2620
5	1700	1480	1310	1200	1760	2150	3470	8280	14900	5920	2910	2590
6	1650	1470	1840	1200	1700	2220	3460	8420	13000	5630	2800	2470
7	1600	1470	1700	1200	1700	2300	3490	8760	11700	5530	2720	2360
8	1560	1450	1700	1260	1740	2370	3510	9070	11200	5450	2680	2280
9	1560	1410	1360	1290	1770	2480	3570	9200	11000	5390	2580	2120
10	1540	1350	1320	1350	1790	2620	3620	9070	10600	5520	2540	2000
11	1530	1270	1150	1460	1810	2790	3590	8800	9930	5370	2730	1960
12	1530	1230	1200	1580	1860	2980	3570	8570	9370	5140	2990	1940
13	1530	1220	1200	1730	1860	3140	3540	8440	8570	5370	3220	2040
14	1500	1220	1220	1770	1840	3240	3500	8440	7960	5350	3070	2010
15	1470	1200	1340	1700	1840	3250	3470	8630	7740	6030	2850	1870
16	1450	1200	1450	1610	1860	3290	3470	8860	8260	6030	2610	1770
17	1440	1220	1470	1550	1880	3300	3510	8960	7940	5770	2490	1690
18	1420	1320	1430	1530	1880	3320	3620	9090	7880	5570	2380	1640
19	1410	1400	1390	1540	1860	3340	3750	9160	7940	5370	2310	1620
20	1410	1370	1330	1550	1870	3340	4020	9200	71[illegible]	5160	2260	1590
21	1410	1360	1320	1580	1880	3360	4450	9520	6630	5100	2190	1580
22	1420	1290	1300	1620	1870	3360	4850	10400	6310	5050	2140	1540
23	1420	1190	1200	1660	1880	3390	5260	11600	6090	4740	2090	1520
24	1470	1150	1100	1670	1900	3410	5680	14500	6080	4410	2060	1500
25	1740	1020	1100	1680	1980	3410	6650	15600	6470	4350	2010	1480
26	1690	1000	1100	1710	2110	3390	7410	16700	6500	4380	2020	1440
27	1560	1020	1050	1940	2170	3410	7410	17700	6180	4200	2070	1410
28	1680	1130	1000	2070	2160	3430	7240	18200	6040	3950	2090	1380
29	1690	1220	1000	2020	---	3490	7160	18800	5920	3790	2090	1350
30	1630	1260	1000	1960	---	3500	7260	20100	6060	3690	2060	1340
31	1590	---	950	1920	---	3490	---	21600	---	3540	2050	---
TOTAL	48540	38970	39610	47500	52430	92290	134650	347810	298250	161260	78920	55710
MEAN	1566	1299	1278	1532	1873	2977	4488	11220	9942	5202	2546	1857
MAX	1770	1540	1840	2070	2170	3500	7410	21600	22300	6340	3390	2620
MIN	1410	1000	950	900	1700	2120	3460	7660	5920	3540	2010	1340
AC-FT	96280	77300	78570	94220	104000	183100	267100	689900	591600	319900	156500	110500

CAL YR 1982 TOTAL 1314497 MEAN 3601 MAX 16900 MIN 700 AC-FT 2607000
WTR YR 1983 TOTAL 1395940 MEAN 3824 MAX 22300 MIN 900 AC-FT 2769000

12447200 OKANOGAN RIVER AT MALOTT, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°16'53", long 119°42'12", in SW¼ sec.9, T.32 N., R.25 E., Okanogan County, Hydrologic Unit 17020006, on right bank 75 ft upstream from highway bridge at Malott, 0.1 mi upstream from Loup Loup Creek, and at mile 17.0.

DRAINAGE AREA.--8,080 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958 to current year. April 1958 to September 1965, published as "near Malott." Records published for both sites December 1965 to July 1967.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 783.55 ft National Geodetic Vertical Datum of 1929. April 1958 to November 1965, water-stage recorder at site 3.9 mi downstream at National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records excellent. Diversions above station for irrigation of about 22,000 acres in the United States and 55,000 acres in Canada. Flow regulated by Okanagan and Skaha Lakes and by natural storage in other lakes.

AVERAGE DISCHARGE.--25 years, 3,130 ft³/s, 2,268,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s June 3, 1972, gage height, 22.16 ft; minimum observed, 288 ft³/s Sept. 4, 1970, gage height, 2.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,300 ft³/s June 1, gage height, 15.10 ft; minimum daily, 980 ft³/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1840	1720	1420	980	2120	2570	4890	8540	22000	6490	3550	2320
2	1900	1680	1440	1080	2110	2540	5250	8980	21800	6350	3400	2340
3	1860	1660	1450	1140	2070	2530	5010	9170	20400	6380	3320	2380
4	1800	1640	1440	1200	2040	2540	4890	9340	18200	6600	3190	2620
5	1810	1610	1420	1230	2010	2600	4840	9370	15800	6190	3050	2660
6	1830	1630	1630	1260	1950	2610	4810	9590	13700	5840	2950	2570
7	1780	1620	1960	1280	1920	2770	4890	10200	12200	5660	2870	2480
8	1740	1600	1680	1330	1900	2900	4930	10500	11500	5560	2800	2400
9	1700	1580	1680	1400	1950	3220	4960	10300	11200	5500	2740	2270
10	1700	1540	1550	1480	1980	3700	5040	9910	11000	5590	2660	2140
11	1680	1470	1300	1600	2010	3770	4980	9500	10300	5500	2910	2100
12	1680	1400	1300	1750	2040	3760	4870	9230	9880	5230	3050	2050
13	1680	1370	1300	1830	2160	4280	4770	9120	9100	5210	3260	2110
14	1670	1360	1350	1920	2110	4500	4700	9160	8440	5970	3230	2170
15	1640	1360	1450	1930	2070	4700	4650	9550	8170	6020	3050	2040
16	1610	1370	1660	1900	2080	4400	4640	9820	8510	6190	2850	1930
17	1590	1380	1750	1780	2120	4310	4690	9770	8560	5930	2700	1840
18	1580	1440	1650	1720	2220	4360	4820	9880	8200	5680	2610	1800
19	1560	1530	1600	1710	2210	4450	5010	9860	8470	5490	2530	1760
20	1560	1540	1550	1750	2130	4500	5320	9910	7900	5250	2450	1740
21	1560	1520	1510	1760	2160	4530	5650	10400	7320	5130	2400	1720
22	1590	1490	1490	1780	2170	4530	6130	11700	6940	5160	2350	1700
23	1580	1400	1470	1830	2190	4550	6600	13100	6690	4940	2300	1680
24	1580	1300	1410	1860	2320	4580	7000	14200	6550	4600	2260	1640
25	1700	1170	1300	1870	2360	4530	7480	15300	6820	4450	2250	1620
26	1870	1090	1220	1900	2440	4470	8310	16300	6870	4480	2230	1590
27	1830	1130	1190	2070	2600	4500	8510	17400	6490	4370	2280	1560
28	1800	1220	1110	2270	2600	4570	8350	18000	6290	4150	2310	1530
29	1830	1320	1050	2280	---	4890	8240	18600	6150	3940	2320	1490
30	1810	1400	1010	2220	---	5180	8290	19500	6170	3820	2310	1480
31	1770	---	990	2160	---	4930	---	20900	---	3680	2310	---
TOTAL	53130	43540	44330	52270	60040	122330	172520	367100	311650	165350	84490	59730
MEAN	1714	1451	1430	1686	2144	3946	5751	11840	10390	5334	2725	1991
MAX	1900	1720	1960	2280	2600	5180	8510	20900	22000	6600	3550	2660
MIN	1560	1090	990	980	1900	2530	4640	8540	6150	3680	2230	1480
AC-FT	105400	86360	87930	103700	119100	242600	342200	728100	618200	328000	167600	118500

CAL YR 1982 TOTAL 1348140 MEAN 3694 MAX 16600 MIN 750 AC-FT 2674000
WTR YR 1983 TOTAL 1536480 MEAN 4210 MAX 22000 MIN 980 AC-FT 3048000

12447200 OKANOGAN RIVER AT MALOTT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-62, 1963-70 (partial-record station), 1972, 1975 to current year. Published as "near Brewster" prior to 1964 and as "near Malott" 1963-66 (station 12447300).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 1969 to June 1971.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)
NOV , 1982												
15...	1430	1360	279	8.3	2.5	1.5	13.0	--	K4	K8	130	13
FEB , 1983												
02...	0900	2110	280	8.3	3.0	1.7	12.6	96	42	44	130	11
JUN												
10...	0900	11800	123	8.1	16.0	11	12.2	130	48	360	55	3
AUG												
03...	1000	3420	220	8.1	21.5	2.3	8.0	93	K150	78	96	5

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV , 1982											
15...	36	9.4	9.3	13	.4	2.1	116	32	2.1	.20	9.4
FEB , 1983											
02...	36	9.6	9.8	14	.4	2.2	119	30	2.2	.20	8.7
JUN											
10...	16	3.6	3.9	13	.2	1.1	52	12	.90	<.10	9.3
AUG											
03...	27	6.9	7.2	14	.3	1.7	91	22	1.7	.30	10

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV , 1982											
15...	172	170	.23	632	<.10	.070	.20	.010	<.010	<.010	<10
FEB , 1983											
02...	169	170	.23	963	<.10	.080	.40	.040	.010	<.010	<10
JUN											
10...	81	78	.11	2580	<.10	.080	.40	.070	.030	.020	40
AUG											
03...	123	130	.17	1140	<.10	.020	.70	.020	.010	<.010	20

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12447200 OKANOGAN RIVER AT MALOTT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV , 1982											
15...	3	37	<.5	<1	<1	<3	3	8	9	16	9
FEB , 1983											
02...	3	36	<.5	<1	<1	<3	3	13	3	13	10
JUN											
10...	<1	24	.6	<1	<1	<3	3	47	11	10	4
AUG											
03...	4	33	.5	<1	<1	<3	3	11	12	12	4

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982											
15...	.1	<10	1	<1	<1	300	<6	7	9	33	--
FEB , 1983											
02...	.1	<10	2	<1	<1	300	<6	5	31	177	--
JUN											
10...	.2	<10	4	<1	<1	120	<6	6	88	2800	42
AUG											
03...	.1	<10	1	<1	<1	220	<6	6	14	129	--

12447390 ANDREWS CREEK NEAR MAZAMA, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 48°49'23", long 120°08'41", in NE¼ sec.1, T.38 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, Okanogan National Forest, on left bank 50 ft upstream from Blizzard Creek, 3.5 mi upstream from mouth, and 20 mi northeast of Mazama.

DRAINAGE AREA.--22.1 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WDR WA-76-2: 1975. WDR WA-77-2: 1976.

GAGE.--Water-stage recorder. Datum of gage is 4,300 ft, from topographic map.

REMARKS.--Water-discharge records good except those for Mar. 3 to Apr. 13 and Apr. 16 to June 9, which are poor. No regulation or diversion.

AVERAGE DISCHARGE.--15 years, 33.2 ft^3/s, 20.40 in/yr, 24,050 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft^3/s June 10, 1972, gage height, 4.00 ft, from rating curve extended above 440 ft^3/s; minimum, 1.2 ft^3/s Nov. 4, 1968, Nov. 20, 1970, Apr. 7, 1975; minimum gage height, 0.27 ft Mar. 25-29, Apr. 6, 7, 1975.

EXTEREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximum (*), from high-water mark:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 30	unknown	*380	*2.95	June 15	0800	270	2.69

Minimum discharge, 3.1 ft^3/s Nov. 14, gage height, 0.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	7.3	5.0	4.4	4.4	5.0	6.2	35	330	77	30	26
2	8.1	5.5	5.0	4.6	4.6	5.0	6.0	40	320	77	29	26
3	7.9	7.3	4.6	4.6	4.6	5.0	6.0	45	300	68	28	22
4	7.3	6.8	6.0	4.4	4.4	5.2	6.0	54	260	66	26	20
5	7.0	6.0	5.3	4.4	4.4	5.4	6.2	60	240	63	26	18
6	7.6	6.2	5.3	4.4	4.4	5.6	6.4	52	230	60	24	18
7	7.3	6.0	5.3	4.6	4.4	6.0	6.6	50	250	60	24	17
8	7.0	5.7	5.3	4.8	4.4	6.4	6.8	50	270	60	23	16
9	7.0	4.8	5.3	4.4	4.4	7.0	6.6	49	260	58	22	16
10	7.3	5.5	5.3	4.6	4.4	7.0	6.4	48	229	52	24	18
11	7.3	5.5	5.3	4.8	4.4	7.0	6.2	47	172	53	35	22
12	7.0	5.0	5.5	4.6	4.6	7.2	6.0	48	127	59	33	20
13	6.0	5.0	5.5	4.4	4.1	6.8	6.1	50	130	59	27	19
14	5.3	3.9	5.0	4.4	4.1	6.4	6.0	52	142	58	25	17
15	5.0	5.0	5.0	4.4	4.1	6.0	6.0	54	207	54	23	16
16	5.0	5.3	5.3	4.4	4.1	5.8	7.0	56	157	51	22	16
17	4.8	5.5	5.0	4.4	4.1	5.8	8.0	60	204	51	21	15
18	4.6	5.5	5.3	4.1	4.1	5.6	10	64	145	48	20	15
19	4.4	5.5	5.3	4.1	4.1	5.6	11	70	108	47	19	15
20	4.6	5.7	5.0	4.1	4.1	5.8	13	80	99	45	19	15
21	5.0	5.5	5.0	4.1	4.1	6.0	16	110	81	42	18	15
22	8.1	5.0	5.0	4.4	4.1	6.2	19	150	83	39	17	14
23	10	5.3	4.8	4.4	5.5	6.0	25	190	91	38	17	14
24	7.9	5.0	4.8	4.4	6.2	6.0	30	220	83	38	17	13
25	7.9	4.8	4.8	4.4	6.5	6.2	28	240	76	38	22	12
26	13	5.0	4.6	4.4	5.7	6.2	27	270	81	37	19	12
27	10	5.3	4.6	4.1	5.3	6.2	27	300	81	34	18	12
28	9.2	5.3	4.6	4.1	5.3	6.2	27	320	87	35	19	11
29	8.1	5.3	4.6	4.1	---	6.4	29	340	117	32	18	11
30	7.6	5.3	4.6	4.1	---	6.4	33	350	90	31	17	11
31	7.9	---	4.6	4.1	---	6.4	---	340	---	30	16	---
TOTAL	223.3	164.8	156.6	135.5	128.9	187.8	403.5	3894	5050	1560	698	492
MEAN	7.20	5.49	5.05	4.37	4.60	6.06	13.4	126	168	50.3	22.5	16.4
MAX	13	7.3	6.0	4.8	6.5	7.2	33	350	330	77	35	26
MIN	4.4	3.9	4.6	4.1	4.1	5.0	6.0	35	76	30	16	11
CFSM	.33	.25	.23	.20	.21	.27	.61	5.70	7.60	2.28	1.02	.74
IN.	.38	.28	.26	.23	.22	.32	.68	6.55	8.50	2.63	1.17	.83
AC-FT	443	327	311	269	256	373	800	7720	10020	3090	1380	976

CAL YR 1982 TOTAL 13022.4 MEAN 35.7 MAX 360 MIN 3.9 CFSM 1.62 IN. 21.92 AC-FT 25830
WTR YR 1983 TOTAL 13094.4 MEAN 35.9 MAX 350 MIN 3.9 CFSM 1.62 IN. 22.04 AC-FT 25970

12447390 ANDREWS CREEK NEAR MAZAMA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1982											
13...	1000	6.4	54	7.4	3.5	.50	11.6	--	K1	K4	22
FEB , 1983											
01...	1345	4.3	60	7.5	1.0	.40	14.0	--	<1	K1	24
JUN											
09...	1130	360	19	7.6	3.5	.40	11.7	104	<1	<1	[illegible]
AUG											
02...	1000	29	41	7.8	8.0	.50	--	--	K9	49	16

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT , 1982											
13...	0	6.9	1.2	2.3	18	.2	.70	29	1.8	<.10	<.10
FEB , 1983											
01...	0	7.7	1.1	2.6	19	.2	.60	33	1.5	.40	<.10
JUN											
09...	0	2.6	.40	1.0	20	.2	.40	12	1.7	.60	<.10
AUG											
02...	0	5.1	.72	1.9	20	.2	.40	23	1.2	.30	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1982											
13...	11	39	--	.05	.67	<.10	.130	.70	.010	<.010	<.010
FEB , 1983											
01...	11	53	45	.07	.62	<.10	<.060	.40	.010	.010	<.010
JUN											
09...	7.0	22	21	.03	21	<.10	.130	.30	.010	.010	.010
AUG											
02...	9.0	28	32	.04	2.2	<.10	<.060	1.2	.020	.010	<.010

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12447390 ANDREWS CREEK NEAR MAZAMA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)
OCT , 1982											
13...	1	.02	--	--	--	--	--	--	--	--	--
FEB , 1983											
01...	7	.08	10	<1	29	<.5	<1	<1	<3	6	10
JUN											
09...	3	2.9	60	<1	11	.5	<1	<1	<3	1	14
AUG											
02...	1	.08	--	--	--	--	--	--	--	--	--

DATE	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1982											
13...	--	--	--	--	--	--	--	--	--	--	--
FEB , 1983											
01...	10	5	2	.1	<10	<1	<1	<1	80	<6	11
JUN											
09...	12	9	1	.1	<10	4	<1	<1	27	<6	7
AUG											
02...	--	--	--	--	--	--	--	--	--	--	--

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
FEB , 1983									
01...	1345	<1.1	<.4	.8	<.4	.7	<.4	.06	.22

12449950 METHOW RIVER NEAR PATEROS, WA

LOCATION.--Lat 48°04'39", long 119°59'02", in SE¼SW¼ sec.20, T.30 N., R.23 E., Okanogan County, Hydrologic Unit 17020008, on right bank 1.4 mi downstream from Black Canyon Creek, 4.3 mi northwest of Pateros, and at mile 6.7.

DRAINAGE AREA.--1,772 mi².

PERIOD OF RECORD.--April 1959 to current year. Water temperatures October 1968 to October 1970.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft, from topographic map. Prior to Dec. 17, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good. Diversions for irrigation of about 11,000 acres above station (1959 Bureau of Reclamation land classification).

AVERAGE DISCHARGE.--24 years, 1,627 ft³/s, 1,179,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft³/s May 31, 1972, gage height, 12.25 ft; minimum daily, 150 ft³/s Jan. 8, 9, 10, 1974, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1920, 46,700 ft³/s May 29, 1945, determined by slope-area measurement of peak flow at site 1 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft³/s and maximum discharge, 21,700 ft³/s May 31, gage height, 10.68 ft; minimum daily discharge, 310 ft³/s Dec. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	587	445	340	446	650	1740	4520	18700	3990	1560	811
2	546	574	440	360	441	666	1740	4770	17400	3800	1540	994
3	535	559	454	370	432	676	1680	4840	14200	3590	1450	1000
4	534	554	516	390	409	697	1650	4820	11300	3230	1340	946
5	534	550	507	410	384	711	1650	4940	9670	3150	1260	895
6	535	557	491	430	401	729	1670	5150	8660	3250	1190	846
7	535	546	449	440	421	798	1760	5200	8610	3170	1150	825
8	536	536	390	460	422	860	1880	5000	9220	2920	1110	790
9	530	526	350	487	426	973	1920	4650	9510	2960	1090	769
10	530	508	350	464	419	1330	1900	4310	8080	2680	1140	769
11	529	504	350	488	425	1700	1820	4120	6970	2550	1360	839
12	526	494	380	481	430	1750	1750	4060	6190	2950	1760	898
13	523	486	410	471	433	1800	1700	4120	5620	3440	1500	860
14	519	472	430	462	427	1770	1660	4370	5380	3520	1310	832
15	513	458	460	439	425	1700	1640	4580	5930	3080	1180	804
16	511	473	475	433	430	1660	1700	4490	6060	[illegible]	1090	790
17	502	492	460	449	441	1640	1830	4670	5920	2540	1030	762
18	506	502	450	445	453	1620	2050	4760	6160	2470	979	769
19	506	496	440	468	450	1600	2440	4900	5300	2370	938	769
20	564	480	440	452	445	1580	2970	5460	4640	2370	895	762
21	510	470	445	441	447	1580	3370	6850	4210	2310	860	755
22	560	429	440	440	467	1580	3670	8210	3930	2180	825	741
23	603	350	426	441	510	1620	4220	9570	3840	2080	804	727
24	622	340	356	442	568	1650	5380	10600	4100	2080	790	708
25	597	430	350	447	620	1620	5850	12000	3860	2100	783	684
26	623	450	350	486	666	1600	5190	12900	3710	2050	811	672
27	690	450	340	532	648	1640	4640	13400	3790	1880	818	654
28	674	450	336	501	645	1650	4350	14700	3880	1780	811	642
29	640	450	330	475	---	1660	4200	17700	4200	1690	811	642
30	617	450	320	460	---	1730	4290	20300	4510	1620	825	642
31	599	---	330	452	---	1730	---	20600	---	1560	811	---
TOTAL	17219	14623	12710	13856	13131	42970	82310	240560	213450	82060	33820	23587
MEAN	555	487	410	447	469	1386	2744	7760	7115	2647	1091	786
MAX	690	587	516	532	666	1800	5850	20600	18700	3990	1760	1000
MIN	502	340	320	340	384	650	1640	4060	3710	1560	783	642
AC-FT	34150	29000	25210	27480	26050	85230	163300	477200	423400	162800	67080	46780

CAL YR 1982 TOTAL 707416 MEAN 1938 MAX 14300 MIN 320 AC-FT 1403000
WTR YR 1983 TOTAL 790296 MEAN 2165 MAX 20600 MIN 320 AC-FT 1568000

12450700 COLUMBIA RIVER BELOW WELLS DAM, WA

LOCATION.--Lat 47°56'48", long 119°51 56", in SW¼SE¼ sec.6, T.28 N., R.24 E., Chelan County, Hydrologic Unit 17020005, at powerhouse of Wells Dam, 0.7 mi northeast of Azwell, and at mile 515.9.

DRAINAGE AREA.--86,100 mi², approximately.

PERIOD OF RECORD.--October 1967 to current year. October 1953 to September 1967 (monthly discharge only) on file in Washington office.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bechtel Corporation). Prior to Oct. 1, 1970, at site 0.8 mi downstream at same datum. Auxiliary water-stage recorder 6.8 mi downstream from base gage at same datum.

REMARKS.--Records good except those above 240,000 ft³/s and those below 70,000 ft³/s, which are fair. Discharge for Oct. 4, 5 and Apr. 7 provided by N.P.D. Reservoir Control Center. Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversion by Feeder Canal (see sta 12435500) for Columbia Basin project and for irrigation of about 380,000 acres in the United States and an additional 35,000 acres in Canada.

AVERAGE DISCHARGE.--30 years, 118,900 ft³/s, 86,140,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 402,000 ft³/s June 15, 1972; maximum elevation, 731.92 ft June 16, 1972; minimum discharge, 17,900 ft³/s Oct. 5, 1970 (from powerplant records); minimum elevation, 703.55 ft Sept. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 271,000 ft³/s Mar. 22, elevation, 727.91 ft; minimum daily, 31,900 ft³/s Sept. 25; minimum elevation, 706.59 ft Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55800	103000	79600	93200	135000	204000	162000	156000	131000	97000	176000	132000
2	59000	123000	84500	96600	138000	198000	139000	150000	161000	61400	146000	106000
3	56000	112000	66300	118000	131000	203000	147000	158000	160000	65300	143000	67200
4	65100	100000	64700	113000	146000	194000	152000	153000	154000	83900	144000	58400
5	69100	95200	82900	122000	165000	189000	169000	158000	147000	99100	153000	66400
6	75000	94800	95500	91300	164000	186000	147000	160000	146000	115000	156000	96900
7	79300	100000	96500	57000	154000	159000	138000	145000	152000	119000	144000	87200
8	76500	104000	110000	71300	156000	183000	132000	142000	161000	109000	167000	89600
9	57200	104000	113000	54600	150000	180000	135000	160000	158000	101000	150000	81200
10	58000	103000	114000	99600	133000	148000	150000	164000	143000	98900	146000	54900
11	70900	111000	71100	88800	114000	130000	153000	157000	121000	130000	137000	52100
12	75600	116000	69100	112000	107000	154000	155000	149000	128000	120000	118000	94300
13	85700	82400	93400	132000	113000	143000	167000	138000	132000	121000	117000	94900
14	77900	85500	97100	135000	134000	155000	157000	147000	124000	123000	113000	75900
15	77700	104000	93400	128000	122000	190000	153000	130000	123000	119000	126000	75300
16	61600	92900	85100	123000	105000	199000	131000	143000	118000	154000	149000	77900
17	75300	92800	89100	119000	114000	199000	117000	149000	111000	170000	148000	55800
18	97300	94200	71900	113000	127000	191000	142000	153000	109000	163000	140000	77000
19	92100	78100	90500	115000	80900	219000	145000	150000	94100	155000	139000	94600
20	103000	75700	109000	121000	137000	208000	153000	147000	115000	165000	129000	78800
21	108000	77000	105000	115000	144000	199000	152000	135000	121000	173000	120000	84900
22	92800	98900	79500	127000	187000	222000	140000	141000	123000	170000	134000	92500
23	59300	109000	61000	127000	181000	210000	134000	145000	128000	138000	104000	69400
24	52900	123000	69900	118000	178000	209000	171000	153000	140000	139000	91500	46900
25	93100	100000	58600	132000	185000	209000	167000	155000	125000	174000	99000	31900
26	91200	99100	79400	116000	167000	203000	150000	157000	110000	176000	78700	75500
27	85000	95900	104000	119000	192000	203000	169000	160000	111000	173000	57600	75900
28	89000	91000	100000	126000	172000	208000	169000	150000	104000	185000	54600	83000
29	98100	111000	110000	105000	---	201000	157000	163000	96600	173000	94800	79200
30	90300	111000	112000	111000	---	199000	135000	167000	101000	180000	107000	76400
31	86700	---	104000	129000	---	180000	---	164000	---	160000	135000	---
TOTAL	2404500	2986500	2760100	3430400	4031900	5875000	4508000	4699000	3847700	4210600	3917200	2334000
MEAN	77560	99550	89040	110700	144000	189500	150300	151600	128300	135800	126400	77800
MAX	108000	123000	114000	135000	192000	222000	171000	167000	161000	185000	176000	132000
MIN	52900	75700	58600	54600	80900	130000	117000	130000	94100	61400	54600	31900
AC-FT	4769000	5924000	5475000	6804000	7997000	11653000	8942000	9320000	7632000	8352000	7770000	4629000

CAL YR 1982	TOTAL	47475800	MEAN	130100	MAX	214000	MIN	46800	AC-FT	94168000
WTR YR 1983	TOTAL	45004900	MEAN	123300	MAX	222000	MIN	31900	AC-FT	89266992

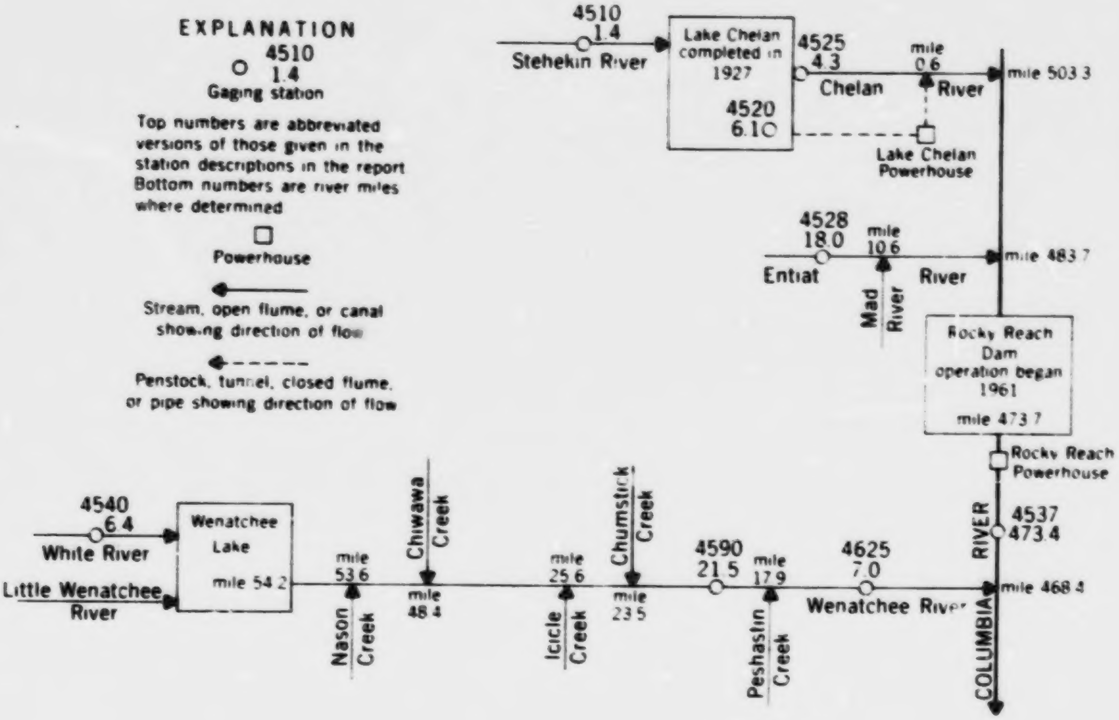
EXPLANATION
4510
1.4
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
4510
1.4
Stehekin River
Lake Chelan completed in 1927
4520
6.10
4525
4.3
Chelan
mile 0.6
River
mile 503.3
Lake Chelan Powerhouse
4528
18.0
mile 10.6
Entiat
River
mile 483.7
Mad River
Rocky Reach Dam operation began 1961
mile 473.7
Rocky Reach Powerhouse
4537
473.4
4540
6.4
White River
Little Wenatchee River
Wenatchee Lake
mile 54.2
mile 53.6
Nason Creek
Chiwawa Creek
mile 48.4
mile 25.6
Icicle Creek
Chumstick Creek
mile 23.5
4590
21.5
mile 17.9
Peshastin Creek
4625
7.0
Wenatchee River
mile 468.4
COLUMBIA RIVER

Figure 25.—Gaging stations in Columbia River basin from Chelan to Wenatchee Rivers.

12451000 STEHEKIN RIVER AT STEHEKIN, WA

LOCATION.--Lat 48°19'47", long 120°41'26", in NE¼SE¼ sec.26, T.33 N., R.17 E., Chelan County, Hydrologic Unit 17020009, Lake Chelan National Recreation Area, on left bank 1,100 ft upstream from Boulder Creek, 1.4 mi upstream from Lake Chelan, and 2.1 mi northwest of Stehekin.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--October 1910 to October 1915, October 1926 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 412: 1914. WSP 1316: 1911(M), 1914-15(M). WSP 1446: 1912(M). WSP 1933: Drainage area. WDR-80-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,098.5 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 17, 1911, nonrecording gage 0.4 mi upstream from mouth at Lake Chelan at different datums (datum change made June 13, 1911). Aug. 17, 1911, to Oct. 31, 1915, nonrecording gage 0.2 mi downstream from Boulder Creek at different datum.

REMARKS.--Records good. No known regulation or diversion.

AVERAGE DISCHARGE.--62 years, 1,418 ft³/s, 55.98 in/yr, 1,027,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft³/s May 29, 1948, gage height, 29.00 ft, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 56 ft³/s Jan. 21, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 6,500 ft³/s and maximum discharge 12,100 ft³/s 2300 hours, May 30, gage height, 26.47 ft, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow,; minimum, 225 ft³/s Jan. 5, 6, gage height, 17.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	482	538	280	259	445	526	852	2640	8520	2670	2360	1340
2	503	497	283	262	430	532	818	2830	7200	2480	2040	1480
3	497	480	455	262	416	543	777	2770	5530	2190	1710	1090
4	456	480	733	259	404	560	748	2750	4670	2220	1520	966
5	426	492	525	250	389	571	740	2830	4010	2550	1530	854
6	420	492	462	289	390	573	762	2840	3970	2670	1580	756
7	490	465	412	316	381	611	824	2710	4610	2160	1540	714
8	445	438	391	659	370	675	834	2490	5440	1850	1780	630
9	430	410	382	569	371	959	824	2240	5180	1680	2000	567
10	463	399	348	1060	355	1250	795	2070	4260	1660	2350	726
11	506	392	337	1270	351	1280	762	2090	3570	2410	2790	1460
12	529	381	348	1020	355	1180	735	2220	3100	5290	1940	910
13	518	374	341	881	355	1130	717	2450	2950	5330	1590	774
14	560	348	330	794	355	1060	712	2660	3050	4130	1520	762
15	555	344	330	727	351	977	737	2550	3740	2980	1370	702
16	530	358	337	677	351	919	815	2500	3360	2340	1190	672
17	564	358	334	634	386	874	959	2570	4270	2150	1130	630
18	495	351	330	601	396	842	1190	2580	3750	2230	1100	600
19	463	351	330	574	392	817	1540	2770	2900	2280	1080	562
20	437	344	323	545	397	796	1950	3440	2470	2630	1010	530
21	428	334	316	523	394	782	2220	4650	2240	2270	952	505
22	611	292	313	506	408	772	2340	5250	2160	2230	973	500
23	771	292	299	501	450	775	2510	5750	2290	2450	1040	491
24	657	286	292	497	516	774	2880	6130	2310	2630	1030	482
25	617	289	289	487	550	758	2730	6590	2220	2270	945	473
26	746	299	286	518	537	755	2360	6670	2440	1850	931	473
27	689	299	262	545	532	763	2110	6710	2640	1580	889	530
28	640	299	253	526	524	758	2030	7720	2990	1600	861	450
29	604	295	244	499	---	812	2090	9810	3290	1590	868	423
30	566	289	262	479	---	915	2320	10900	2920	1650	988	405
31	539	---	262	461	---	887	---	10200	---	2000	980	---
TOTAL	16637	11266	10699	17450	11551	25426	41681	132380	112040	76020	43587	21457
MEAN	537	376	345	563	413	820	1389	4270	3735	2452	1406	715
MAX	771	538	733	1270	550	1280	2880	10900	8520	5330	2790	1480
MIN	420	286	244	250	351	526	712	2070	2160	1580	861	405
CFSM	1.67	1.17	1.07	1.75	1.29	2.55	4.33	13.3	11.6	7.64	4.38	2.23
IN.	1.93	1.31	1.24	2.02	1.34	2.95	4.83	15.34	12.98	8.81	5.05	2.49
AC-FT	33000	22350	21200	34610	22910	50430	82670	262600	222200	150800	86450	42560

CAL YR 1982 TOTAL 557799 MEAN 1528 MAX 8830 MIN 200 CFSM 4.76 IN. 64.64 AC-FT 1106000
WTR YR 1983 TOTAL 520184 MEAN 1425 MAX 10900 MIN 244 CFSM 4.44 IN. 60.28 AC-FT 1032000

12452000 LAKE CHELAN AT CHELAN, WA

LOCATION.--Lat 47°50'11", long 120°03'37", near center of sec.15, T.27 N., R.22 E., Chelan County, Hydrologic Unit 17020009, on south shore of Lake Chelan at Lakeside, 2.1 mi west of Chelan.

DRAINAGE AREA.--924 mi².

PERIOD OF RECORD.--September 1897 to December 1899, January to June 1905 and December 1910 to September 1911 (fragmentary gage heights only), October 1911 to current year. Records of change in contents prior to October 1911, published in WSP 482 and 492 in conjuction with records for Chelan River near Chelan, have been found to be unreliable and should not be used. Monthend contents October 1911 to September 1950 published in WSP 1316. Chemical analyses June 1971 to August 1972.

REVISED RECORDS.--WSP 1246: 1951. WSP 1286: 1952. WSP 1933: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is mean sea level, datum of 1912. To convert to National Geodetic Vertical Datum of 1929, subtract 1.73 ft. Prior to Jan. 1, 1900, nonrecording gage at Lakeside about 1 mi west of Chelan at datum 1,070.18 ft National Geodetic Vertical Datum of 1912. Jan. 1 to June 30, 1905, nonrecording gage at upper highway bridge at Chelan at different datum. Dec. 5, 1910, to Nov. 13, 1927, nonrecording gage at Forest Service boat landing at Chelan at datum 1,076.07 ft National Geodetic Vertical Datum of 1912.

REMARKS.--Elevations for Sept. 27 and 28 provided by Public Utility District No. 1 of Chelan County. Reservoir is formed by low concrete dam at lake outlet completed Sept. 3, 1927. Usable capacity between elevations 1,079 ft and 1,100 ft 577,400 acre-ft. Regulation between these elevations is allowed by stipulation of the Federal Power Commission. Water is used for power development. Elevation of lake maintained between 1,092 ft and 1,100 ft during period Aug. 16 to Sept. 15 for scenic effect and recreational purposes. Diversions for irrigation of about 6,280 acres with an annual depletion of about 11,000 acre-ft, 1946 estimated.

COOPERATION.--Gage-height record collected in cooperation with Public Utility District No.1 of Chelan County.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,100.16 ft June 30, 1981 (affected by seiche action); maximum contents, 679,300 acre-ft June 30, 1981, elevation, 1,100.06 ft, mean of seiche; minimum since completion of dam in 1927, 1,079.68 ft Apr. 3, 4, 1937, Apr. 3, 1970, contents, 21,350 acre-ft; minimum elevation, 1,076.78 ft, Jan. 27, 28, Dec. 2-5, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,100.12 ft Aug. 10 (affected by seiche action); maximum contents, 679,000 acre-ft Aug. 10, elevation, 1,100.05 ft, mean of seiche; minimum elevation, 1,085.97 ft Mar. 8, contents, 221,200 acre-ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)
(Based on data by the Pacific Northwest Coordination Agreement)

1,080	31,540	1,090	350,900	1,100	677,400
1,085	190,200	1,095	513,300		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1098.01	1095.54	1092.64	1089.92	1088.20	1086.33	1087.24	1087.91	1096.94	1099.80	1099.80	1099.80
2	1097.95	1095.45	1092.53	1089.82	1088.13	1086.28	1087.26	1088.03	1097.17	1099.86	1099.89	1099.87
3	1097.86	1095.34	1092.55	1089.72	1088.03	1086.23	1087.22	1088.14	1097.26	1099.87	1099.89	1099.92
4	1097.77	1095.27	1092.56	1089.63	1087.94	1086.17	1087.18	1088.22	1097.41	1099.86	1099.89	1099.89
5	1097.65	1095.19	1092.48	1089.62	1087.85	1086.12	1087.11	1088.37	1097.61	1099.90	1099.90	1099.83
6	1097.54	1095.13	1092.41	1089.52	1087.76	1086.05	1087.05	1088.53	1097.81	1099.84	1099.89	1099.81
7	1097.47	1095.00	1092.30	1089.43	1087.70	1086.02	1087.05	1088.69	1098.03	1099.78	1099.89	1099.80
8	1097.38	1094.91	1092.20	1089.55	1087.60	1086.00	1087.00	1088.81	1098.36	1099.72	1099.89	1099.77
9	1097.27	1094.81	1092.09	1089.36	1087.50	1086.02	1086.95	1088.91	1098.71	1099.73	1099.93	1099.72
10	1097.18	1094.71	1092.00	1089.41	1087.42	1086.09	1086.92	1089.01	1098.97	1099.72	1099.94	1099.67
11	1097.12	1094.60	1091.89	1089.33	1087.38	1086.17	1086.88	1089.09	1099.15	1099.75	1099.80	1099.68
12	1097.03	1094.48	1091.78	1089.31	1087.31	1086.32	1086.84	1089.16	1099.28	1099.85	1099.76	1099.64
13	1096.96	1094.38	1091.71	1089.30	1087.23	1086.48	1086.80	1089.25	1099.36	1099.87	1099.74	1099.57
14	1096.88	1094.30	1091.61	1089.23	1087.14	1086.65	1086.74	1089.37	1099.45	1099.79	1099.76	1099.53
15	1096.81	1094.17	1091.53	1089.16	1087.06	1086.78	1086.70	1089.50	1099.59	1099.74	1099.76	1099.44
16	1096.73	1094.08	1091.50	1089.10	1086.99	1086.90	1086.67	1089.64	1099.75	1099.78	1099.74	1099.37
17	1096.67	1094.04	1091.43	1089.02	1086.93	1087.00	1086.64	1089.75	1099.88	1099.80	1099.70	1099.28
18	1096.54	1093.95	1091.31	1088.99	1086.88	1087.10	1086.63	1089.83	1099.83	1099.84	1099.64	1099.20
19	1096.43	1093.86	1091.27	1088.98	1086.80	1087.20	1086.64	1089.95	1099.79	1099.87	1099.59	1099.08
20	1096.36	1093.78	1091.18	1088.91	1086.75	1087.30	1086.70	1090.14	1099.76	1099.90	1099.56	1099.00
21	1096.27	1093.65	1091.09	1088.83	1086.66	1087.37	1086.76	1090.36	1099.73	1099.84	1099.48	1098.89
22	1096.24	1093.54	1091.01	1088.76	1086.62	1087.43	1086.85	1090.71	1099.76	1099.83	1099.41	1098.83
23	1096.21	1093.42	1090.92	1088.68	1086.56	1087.45	1087.00	1091.07	1099.82	1099.86	1099.44	1098.73
24	1096.14	1093.31	1090.80	1088.63	1086.54	1087.43	1087.20	1091.52	1099.87	1099.89	1099.43	1098.64
25	1096.04	1093.20	1090.71	1088.55	1086.50	1087.40	1087.37	1092.04	1099.86	1099.79	1099.43	1098.54
26	1095.99	1093.11	1090.59	1088.54	1086.46	1087.36	1087.49	1092.58	1099.83	1099.76	1099.48	1098.44
27	1095.94	1093.01	1090.49	1088.57	1086.43	1087.35	1087.59	1093.05	1099.81	1099.75	1099.54	1098.42
28	1095.86	1092.91	1090.40	1088.50	1086.38	1087.30	1087.67	1093.65	1099.80	1099.74	1099.58	1098.27
29	1095.80	1092.83	1090.28	1088.41	---	1087.30	1087.75	1094.35	1099.85	1099.72	1099.60	1098.15
30	1095.72	1092.74	1090.13	1088.34	---	1087.30	1087.82	1095.29	1099.84	1099.69	1099.66	1098.09
31	1095.61	---	1090.03	1088.29	---	1087.29	---	1096.16	---	1099.73	1099.73	---
MEAN	1096.76	1094.16	1091.47	1089.08	1087.17	1086.78	1087.06	1090.36	1099.08	1099.80	1099.70	1099.23
MAX	1098.01	1095.54	1092.64	1089.92	1088.20	1087.45	1087.82	1096.16	1099.88	1099.90	1099.94	1099.92
MIN	1095.61	1092.74	1090.03	1088.29	1086.38	1086.00	1086.63	1087.91	1096.94	1099.69	1099.41	1098.09
†	533000	438800	350200	294500	233700	263000	282200	566300	671100	670800	668800	614500
‡	-80800	-94200	-88600	-55700	-60800	+29300	+19200	+284100	+104800	-300	-2000	-54300

CAL YR 1982 MEAN 1092.81 MAX 1099.96 MIN 1084.73 ‡ -53500
WTR YR 1983 MEAN 1093.42 MAX 1099.94 MIN 1086.00 ‡ +700

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

12452500 CHELAN RIVER AT CHELAN, WA

LOCATION.--Lat 47°48'31", long 119°59'08", in SE¼NE¼ sec.30, T.27 N., R.23 E., Chelan County, Hydrologic Unit 17020009, at Chelan River powerplant tailrace, 4.3 mi downstream from control dam at outlet of Lake Chelan, and 3.0 mi southeast of Chelan.

DRAINAGE AREA.--924 mi².

PERIOD OF RECORD.--November 1903 to current year. Published as "below Chelan Lake" 1904-05. Adjusted records for October 1903 to September 1911, published in WSP 482, 492, and 870 are unreliable and should not be used.

REVISED RECORDS.--WSP 482: 1904-13. WSP 612: 1924. WSP 1246: 1951. WSP 1286: 1952. WSP 1933: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and watt-hour meters on each turbine. Datum of gage is mean sea level, datum of 1912. To convert to National Geodetic Vertical Datum of 1929, subtract 1.62 ft. See WSP 1933 for history of changes prior to Mar. 20, 1939. Water-stage recorder for Lake Chelan at Chelan (see site 12452000) also used to determine head and spill discharge. Mar. 20, 1939, to Sept. 30, 1981, gage at site 1.7 mi downstream from the Lake Chelan gage, at same datum, and published as the gage of record, used to determine head and spill discharge.

REMARKS.--Daily discharge determined from flow through turbines computed from relation between loading and head, plus flow through two irrigation pipes which divert water from the penstock just above the turbines, plus flow over the spillway computed from relation between discharge, Lake Chelan elevations, and gate openings. Unmeasured water that is diverted for irrigation above station is a small percentage of total runoff. Public Utility District No. 1 of Chelan County diverts water at Chelan to develop about 40,000 KW and to irrigate 900 acres near Chelan. This quantity is included in records of daily discharge. Diversions for irrigation of about 6,280 acres, depletion 11,000 acre-ft (1964 estimate). Flow regulated by Lake Chelan (station 12452000).

COOPERATION.--Records completely furnished by Public Utility District No. 1 of Chelan County except for partial records furnished during period of spill.

AVERAGE DISCHARGE.--79 years (water years 1905-83), 2,059 ft³/s, 30.26 in/yr, 1,492,000 acre-ft/yr, adjusted for storage since October 1911.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,400 ft³/s June 3, 1968; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times owing to artificial regulation.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 10,800 ft³/s June 2; minimum daily, 0.30 ft³/s Mar.16-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1800	2070	2030	2100	2050	2070	2050	2450	4950	3360	1780	812
2	1800	2060	2030	2100	2050	2080	2070	2530	10800	2730	1820	922
3	1800	2060	2040	2090	2070	2070	2040	2190	7150	3400	2050	1440
4	1800	2060	2030	2100	2000	2080	2030	2080	5370	2840	2050	1790
5	1800	2070	2040	2090	1990	2080	2060	2060	3660	3430	2070	1280
6	1820	2060	2040	2090	1990	2080	2050	2060	3080	5230	2070	1040
7	1830	2070	2040	2090	1860	2080	2030	2080	3090	4270	2070	1050
8	1760	2060	2030	2090	2010	2100	2040	2070	3100	2840	2050	1040
9	1840	2060	2050	2100	2010	2080	2060	2070	3150	2560	2070	1320
10	1860	2050	2030	2080	2000	2100	2040	2070	3180	2560	3380	1710
11	1860	2050	2030	2100	2020	702	2030	2060	3190	2550	8580	1710
12	1800	2040	2050	2090	2010	2.3	2050	2070	3200	3580	2080	1920
13	1820	2040	2100	2080	2020	2.3	2100	2080	3220	9390	2010	2070
14	1900	2040	2110	2070	2020	2.3	2070	2080	3220	7760	2010	2070
15	1980	2040	2100	2070	2010	2.3	2110	2100	3230	3300	2010	2070
16	2100	2050	2120	2080	2010	.30	2030	2090	3250	2530	2020	2070
17	2100	2070	2100	2070	2040	.30	2030	2090	5690	2520	2040	2110
18	2080	2060	2110	2080	2010	.30	2070	2100	7280	2410	2050	2070
19	1780	2070	2130	2070	2020	.30	2020	2120	6330	2560	2050	2040
20	1720	2060	2130	1980	2040	.30	2020	2130	3860	3590	2050	2040
21	2000	2060	2130	2070	2040	260	2070	2140	2830	3690	2050	2010
22	2050	2060	2130	2070	2050	1460	1950	2150	2590	2570	1770	2010
23	2050	2060	2130	2070	2080	2110	2080	2170	2590	2680	1240	2000
24	2060	2050	2120	2070	2100	2110	2050	2130	2590	3650	1180	1990
25	2050	2050	2110	2060	2090	2090	2070	2140	4130	4900	449	1990
26	2050	2040	2100	2070	2110	2080	2050	2070	4160	2520	509	1980
27	2050	2030	2100	2070	2080	2090	2060	2090	4160	2530	499	1970
28	2030	2040	2100	2060	2100	2050	1780	2110	3930	2410	489	2010
29	2080	2030	2100	2050	---	2100	2310	2140	4220	2230	499	1850
30	2080	2030	2100	2040	---	2110	2340	2120	4450	2020	499	1140
31	2070	---	2100	2050	---	2120	---	2140	---	1990	482	---
TOTAL	59820	61590	64560	64300	56880	42112.70	61760	65980	125650	104600	57976	51524
MEAN	1930	2053	2083	2074	2031	1358	2059	2128	4188	3374	1870	1717
MAX	2100	2070	2130	2100	2110	2120	2340	2530	10800	9390	8580	2110
MIN	1720	2030	2030	1980	1860	.30	1780	2060	2590	1990	449	812
AC-FT	118700	122200	128100	127500	112800	83530	122500	130900	249200	207500	115000	102200
MEAN†	616	471	642	1167	937	1835	2382	6748	5951	3369	1837	805
CFSM†	0.67	0.51	0.69	1.26	1.01	1.99	2.58	7.30	6.44	3.65	1.99	0.87
IN.†	0.77	0.57	0.80	1.47	1.06	2.29	2.88	8.42	7.19	4.21	2.29	0.97
AC-FT†	37900	28000	39500	71800	52000	112830	141700	415000	354000	207200	113000	47900

CAL YR 1982 TOTAL 860926 MEAN 2359 MAX 10600 MIN 56 AC-FT 1708000 MEAN† 2285 CFSM† 2.47 IN.† 33.59 AC-FT† 1654500
WTR YR 1983 TOTAL 816752.70 MEAN 2238 MAX 10800 MIN .30 AC-FT 1620000 MEAN† 2238 CFSM† 2.42 IN.† 32.90 AC-FT† 1620700

† Adjusted for change in contents, in Lake Chelan.

12452800 ENTIAT RIVER NEAR ARDENVOIR, WA

LOCATION.--Lat 47°49'07", long 120°25'19", in NE¼NE¼ sec.27, T.27 N., R.19 E., Chelan County, Hydrologic Unit 17020010, on left bank 0.5 mi downstream from Stormy Creek, 6.0 mi northwest of Ardenvoir, and at mile 18.0.

DRAINAGE AREA.--203 mi².

PERIOD OF RECORD.--September 1957 to current year. Water temperatures July 1968 to September 1970.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,560.97 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. No regulation or diversion.

AVERAGE DISCHARGE.--26 years, 388 ft³/s, 25.96 in/yr, 281,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,430 ft³/s June 10, 1972, gage height, 8.98 ft; minimum daily, 25 ft³/s Dec. 17, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,750 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 31	0200	*4,670	*7.82	June 9	0530	2,500	6.05

Minimum discharge, 49 ft³/s Nov. 22-24, gage height, 0.84 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	110	85	72	109	153	242	722	3730	1010	465	255
2	102	103	83	74	107	153	240	770	3500	915	464	257
3	102	104	122	78	104	157	233	795	3100	826	419	224
4	99	104	241	81	91	158	229	828	2580	793	377	205
5	97	107	160	93	88	157	227	872	2170	832	357	190
6	96	103	136	106	104	159	231	920	2000	916	359	178
7	101	104	104	99	102	171	244	931	2030	837	340	170
8	97	99	93	177	100	180	252	894	2210	744	343	168
9	96	89	98	180	98	221	256	838	2330	670	361	166
10	96	90	88	213	95	282	251	780	1980	640	368	178
11	96	90	80	215	97	286	246	759	1730	659	507	278
12	94	84	98	189	100	279	239	747	1480	817	436	184
13	92	88	96	175	101	281	234	770	1320	949	352	168
14	91	72	101	162	96	271	230	821	1270	947	318	159
15	90	76	99	154	96	260	231	818	1420	764	301	155
16	89	93	103	146	97	252	242	804	1410	659	278	150
17	90	91	107	141	106	246	263	843	1470	595	265	146
18	89	94	104	137	109	240	303	877	1460	571	255	152
19	87	93	98	135	104	234	361	976	1270	569	241	146
20	86	91	97	129	105	230	445	1160	1110	631	226	142
21	88	75	95	125	105	226	521	1460	989	601	215	138
22	122	56	93	123	113	226	585	1730	909	574	207	135
23	162	51	81	121	131	232	677	1970	876	582	208	130
24	126	58	83	119	156	227	875	2200	857	610	216	125
25	118	74	91	117	165	222	899	2430	833	582	200	121
26	144	85	78	122	161	219	832	2600	864	516	194	118
27	134	90	68	129	156	222	759	2710	917	459	192	116
28	125	90	64	120	152	220	709	3040	1010	430	205	115
29	124	90	65	115	---	243	681	3620	1120	416	205	114
30	115	88	68	113	---	246	695	4220	1090	407	217	112
31	112	---	70	111	---	242	---	4310	---	422	205	---
TOTAL	3265	2642	3049	4071	3148	6895	12432	47215	49035	20943	9296	4845
MEAN	105	88.1	98.4	131	112	222	414	1523	1635	676	300	162
MAX	162	110	241	215	165	286	899	4310	3730	1010	507	257
MIN	86	51	64	72	88	153	227	722	833	407	192	112
CFSM	.52	.43	.48	.65	.55	1.09	2.04	7.50	8.05	3.33	1.48	.80
IN.	.60	.48	.56	.75	.58	1.26	2.28	8.65	8.99	3.84	1.70	.89
AC-FT	6480	5240	6050	8070	6240	13680	24660	93650	97260	41540	18440	9610

CAL YR 1982 TOTAL 163468 MEAN 448 MAX 3300 MIN 51 CFSM 2.21 IN. 29.96 AC-FT 324200
WTR YR 1983 TOTAL 166836 MEAN 457 MAX 4310 MIN 51 CFSM 2.25 IN. 30.57 AC-FT 330900

12453700 COLUMBIA RIVER AT ROCKY REACH DAM, WA

LOCATION.--Lat 47°31'28", long 120°'8'04", in SW¼NW¼ sec.2, T.23 N., R.20 E., Chelan County, Hydrologic Unit 17020010, on right bank 0.5 mi downstream from Rocky Reach Dam, 1.5 mi downstream from Swakane Creek, 7.4 mi north of Wenatchee, and at mile 473.4.

DRAINAGE AREA.--87,800 mi², approximately.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Auxiliary water-stage recorder 1.9 mi downstream from base gage at same datum.

REMARKS.--Records good. Discharge for Oct. 1-3, 9, 10, 20-25, Nov. 9 to Jan. 12, Feb. 16, 19, Apr. 8, 20, May 16, June 22, July 1, 2, 4, 10, 16, 17, 19, Aug. 23-28, 30, Sept. 3-5, and 11 was provided by Corps of Engineers N.P.D. Reservoir Control Center. Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversion by Feeder Canal (see sta 12435500) for Columbia Basin project and for irrigation of about 380,000 acres in the United States and an additional 35,000 acres in Canada.

AVERAGE DISCHARGE.--23 years, 118,300 ft³/s, 85,710,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 535,000 ft³/s June 10, 1961, elevation, about 635.50 ft; minimum daily, 25,100 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 296,000 ft³/s Mar. 25, elevation, 627.45 ft; minimum daily discharge, 31,000 ft³/s Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60800	106000	80300	93100	135000	203000	185000	161000	143000	100000	175000	130000
2	61000	124000	83000	95600	138000	197000	141000	152000	177000	64800	145000	105000
3	60300	112000	66100	118000	129000	205000	140000	167000	177000	66100	141000	66300
4	71200	102000	65800	116000	144000	199000	156000	161000	168000	85200	141000	56200
5	69900	94000	81300	124000	162000	197000	166000	166000	159000	105000	149000	66000
6	73700	90500	93900	94700	161000	189000	155000	168000	160000	124000	153000	95600
7	78400	98600	95900	59900	153000	165000	128000	152000	165000	126000	141000	79900
8	75700	102000	107000	70900	159000	185000	140000	150000	166000	110000	165000	84100
9	60500	105000	115000	57100	149000	174000	146000	162000	162000	98000	149000	79500
10	59800	99600	110000	99000	130000	155000	151000	167000	150000	97800	145000	54800
11	71700	110000	75200	89000	112000	135000	160000	161000	127000	122000	140000	51700
12	71100	113000	68400	113000	104000	153000	155000	154000	131000	118000	118000	90100
13	85300	81500	91200	127000	108000	156000	169000	138000	135000	120000	117000	95400
14	73900	84100	96900	132000	132000	143000	154000	150000	125000	128000	112000	73600
15	75400	102000	94000	124000	120000	197000	157000	129000	127000	117000	121000	73900
16	60600	92800	85500	121000	108000	193000	139000	144000	119000	159000	145000	74100
17	71700	90700	87300	115000	111000	198000	124000	148000	116000	177000	145000	55500
18	97300	93100	73400	108000	125000	202000	145000	152000	108000	162000	137000	75200
19	87700	83100	89500	107000	84600	210000	144000	150000	91900	161000	135000	97000
20	102000	76600	109000	118000	128000	211000	159000	152000	110000	164000	128000	75900
21	106000	78800	106000	113000	141000	203000	160000	139000	123000	172000	115000	83900
22	81500	97400	79100	124000	183000	219000	147000	147000	122000	170000	127000	93000
23	62200	109000	63500	127000	182000	218000	143000	149000	130000	139000	104000	68900
24	55300	124000	70600	117000	174000	208000	172000	157000	132000	136000	90600	47700
25	91800	101000	59800	131000	185000	212000	178000	163000	122000	175000	96000	31000
26	91000	97100	79200	114000	166000	209000	157000	164000	108000	175000	73800	74600
27	83400	95400	103000	115000	194000	203000	180000	168000	108000	169000	55100	73900
28	90900	89400	98500	126000	171000	213000	178000	157000	102000	184000	54400	78100
29	100000	108000	111000	104000	---	210000	165000	178000	99700	171000	89000	78500
30	90200	112000	112000	108000	---	205000	165000	179000	105000	178000	102000	77700
31	87100	---	104000	126000	---	189000	---	182000	---	160000	130000	---
TOTAL	2407400	2972700	2755400	3387300	3988600	5956000	4659000	4867000	3968600	4233900	3838900	2287100
MEAN	77660	99090	88880	109300	142500	192100	155300	157000	132300	136600	123800	76240
MAX	106000	124000	115000	132000	194000	219000	185000	182000	177000	184000	175000	130000
MIN	55300	76600	59800	57100	84600	135000	124000	129000	91900	64800	54400	31000
AC-FT	4775000	5896000	5465000	6719000	7911000	11814000	9241000	9654000	7872000	8398000	7614000	4536000

CAL YR 1982 TOTAL 48831800 MEAN 133800 MAX 232000 MIN 52800 AC-FT 96858000
WTR YR 1983 TOTAL 45321900 MEAN 124200 MAX 219000 MIN 31000 AC-FT 89896000

12454000 WHITE RIVER NEAR PLAIN, WA

LOCATION.--Lat 47°52'27", long 120°52'09", in NE¼NE¼ sec.5, T.27 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, on left bank 200 ft downstream from Forest Service bridge, 1.2 mi downstream from Sears Creek, 12.5 mi northwest of Plain, and at mile 6.4.

DRAINAGE AREA.--150 mi².

PERIOD OF RECORD.--May 1911 to April 1912, May to September 1912 (monthly discharge only), July to August 1913, October 1913 to March 1914 (monthly discharge only), April to September 1914, August 1954 to current year (discontinued). Published as "near Chiwaukum" 1911-14.

REVISED RECORDS.--WSP 1316: 1914.

GAGE.--Water-stage recorder. Datum of gage is 1,881.92 ft National Geodetic Vertical Datum of 1929. May 1911 to September 1914, nonrecording gage at same site at different datum.

REMARKS.--Records good. No regulation or diversion.

AVERAGE DISCHARGE.--31 years (water years, 1912, 1914, 1955-83), 807 ft³/s, 73.06 in/yr, 584,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,100 ft³/s Dec. 26, 1980, gage height, 17.55 ft, from rating curve extended above 6,000 ft³/s on basis of contracted-opening measurement and flow-over-road measurement of peak flow; minimum, 47 ft³/s Nov. 27, 1979, gage height, 2.15 ft, result of freezeup upstream of gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s and maximum (*).

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 31	0230	*5,900	*13.30	July 13	1630	3,550	10.32
June 9	0100	3,550	10.33				

Minimum daily discharge, 140 ft³/s Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	349	156	170	274	445	557	1590	4200	1540	1260	706
2	208	308	156	170	265	435	532	1630	3660	1510	1030	643
3	205	292	739	180	253	428	507	1480	2950	1310	876	463
4	178	295	1140	190	247	421	493	1460	2580	1390	785	413
5	163	298	651	404	235	414	493	1550	2370	1650	812	350
6	164	295	536	479	235	408	525	1540	2370	1610	798	311
7	212	280	462	452	229	435	579	1480	2730	1230	766	297
8	191	265	414	1130	220	500	561	1340	3150	1050	882	259
9	204	247	388	811	220	788	546	1210	2930	979	957	235
10	241	238	350	1130	214	982	521	1160	2440	1010	1130	469
11	260	232	340	1110	217	974	500	1210	2060	1310	1180	625
12	256	223	327	958	226	922	479	1270	1800	2320	882	383
13	237	217	311	846	238	894	469	1370	1740	2940	719	335
14	241	200	301	750	235	842	472	1460	1860	2270	670	323
15	235	200	289	674	226	777	503	1330	2300	1560	617	300
16	221	208	295	615	226	731	579	1320	1870	1280	534	280
17	269	208	280	564	250	689	689	1420	2230	1220	507	259
18	220	208	268	514	259	663	850	1420	1960	1280	507	256
19	205	202	262	476	250	633	1070	1530	1550	1350	485	235
20	191	191	253	435	250	611	1290	1910	1350	1510	456	219
21	191	183	244	404	244	593	1430	2520	1250	1270	425	206
22	632	160	238	378	268	586	1410	2720	1220	1290	432	204
23	608	140	223	365	381	590	1530	2860	1340	1470	459	204
24	469	150	217	346	521	579	1810	3100	1320	1490	466	201
25	404	160	211	330	518	557	1570	3310	1280	1260	407	199
26	532	164	208	327	493	543	1350	3340	1490	992	389	194
27	462	166	190	343	476	539	1230	3350	1720	880	377	211
28	428	166	170	327	459	525	1210	3910	1920	922	377	184
29	401	164	150	308	---	590	1230	4990	1930	886	425	172
30	359	161	160	292	---	604	1370	5500	1700	932	536	163
31	336	---	160	283	---	582	---	5140	---	1120	478	---
TOTAL	9097	6570	10089	15761	8129	19280	26355	69420	63270	42831	20624	9299
MEAN	293	219	325	508	290	622	879	2239	2109	1382	665	310
MAX	632	349	1140	1130	521	982	1810	5500	4200	2940	1260	706
MIN	163	140	150	170	214	408	469	1160	1220	880	377	163
CFSM	1.95	1.46	2.17	3.39	1.93	4.15	5.86	14.9	14.1	9.21	4.43	2.07
IN.	2.26	1.63	2.50	3.91	2.02	4.78	6.54	17.22	15.69	10.62	5.11	2.31
AC-FT	18040	13030	20010	31260	16120	38240	52280	137700	125500	84960	40910	18440

CAL YR 1982 TOTAL 322219 MEAN 883 MAX 4990 MIN 140 CFSM 5.89 IN. 79.91 AC-FT 639100
WTR YR 1983 TOTAL 300725 MEAN 824 MAX 5500 MIN 140 CFSM 5.49 IN. 74.59 AC-FT 596500

12459000 WENATCHEE RIVER AT PESHASTIN, WA

LOCATION.--Lat 47°35'00", long 120°36'46", in SE¼SW¼ sec.8, T.24 N., R.18 E., Chelan County, Hydrologic Unit 17020011, on right bank 1.0 mi northwest of Peshastin, 3.5 mi upstream from Peshastin Creek, 4.1 mi downstream from Icicle Creek, and at mile 21.5.

DRAINAGE AREA.--1,000 mi², approximately.

PERIOD OF RECORD.--October 1928 to February 1929 (monthly discharge only), March 1929 to current year.

REVISED RECORDS.--WSP 1316: 1929-32(M).

GAGE.--Water-stage recorder. Datum of gage is 1,028.04 ft National Geodetic Vertical Datum of 1929. Prior to Mar. 24, 1932, nonrecording gage at site 1.2 mi downstream at different datum.

REMARKS.--Records excellent except those for Feb. 25 to Mar. 31, which are good. Numerous diversion upstream for irrigation of an estimated 3,200 acres upstream from station. Diversion from Icicle Creek 5.7 mi upstream from mouth is used for irrigation of a substantial part of the 22,000 acres irrigated downstream from station. Bonneville Power Administration telemeter at station.

AVERAGE DISCHARGE.--55 years, 3,113 ft³/s, 2,255,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s May 28, 1948, gage height, 15.88 ft; minimum, 183 ft³/s Oct. 14, 1939; minimum gage height, 1.24 ft Nov. 1, 1952; minimum daily discharge, 270 ft³/s Oct. 2, 1929, Nov. 30, 1936, Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,600 ft³/s May 31, gage height, 12.03 ft; minimum, 656 ft³/s Nov. 24, gage height, 2.11 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	790	1420	750	820	1520	2230	2950	5770	17800	5500	2780	1310
2	764	1400	739	860	1470	2210	2860	6260	15600	5330	2830	1550
3	804	1310	1320	900	1410	2210	2700	6240	13500	4920	2590	1520
4	819	1260	4960	940	1360	2210	2580	6210	11400	4600	2360	1350
5	770	1300	4060	1200	1290	2210	2500	6400	10000	4730	2210	1220
6	740	1340	3200	1600	1310	2210	2510	6490	9290	5070	2140	1090
7	772	1280	2530	1960	1290	2330	2610	6430	9570	4620	2060	1010
8	881	1200	2120	3540	1260	2430	2660	6130	10600	4060	2020	936
9	926	1130	1940	4250	1240	3090	2630	5620	11100	3620	2120	876
10	975	1070	1700	4880	1210	4240	2570	5170	10100	3380	2190	876
11	1010	1020	1540	5800	1220	4580	2480	5030	8990	3420	2520	1680
12	1040	976	1510	4990	1220	4360	2380	5080	7760	4340	2620	1570
13	1030	971	1490	4230	1270	4300	2310	5320	7010	6020	2230	1350
14	989	896	1480	3640	1270	4130	2270	5710	6710	7260	1970	1220
15	965	864	1420	3220	1270	3780	2270	5710	7470	6350	1820	1150
16	941	911	1450	2900	1270	3520	2360	5450	7410	5150	1670	1070
17	967	948	1440	2630	1390	3300	2580	5450	7240	4320	1530	979
18	991	976	1380	2440	1540	3200	2930	5560	7420	3990	1440	958
19	935	947	1340	2320	1510	2980	3510	5860	6670	3860	1360	973
20	894	921	1300	2140	1490	2840	4320	6600	5860	3960	1310	921
21	893	877	1250	2000	1470	2710	5140	8430	5210	3880	1240	880
22	1320	809	1200	1890	1560	2710	5520	10000	4810	3640	1170	857
23	1990	745	1150	1850	1840	2840	5810	11100	4730	3600	1150	828
24	1810	696	1080	1790	2270	2840	6830	12000	4840	3840	1210	830
25	1660	707	1040	1740	2490	2700	6790	13100	4650	3700	1160	795
26	1710	726	1010	1770	2450	2610	6130	13700	4780	3320	1100	772
27	1770	750	860	1880	2350	2580	5540	13800	5210	2950	1080	753
28	1680	761	740	1830	2310	2580	5190	14700	5760	2750	1100	740
29	1700	776	700	1730	---	2740	5030	17100	6130	2620	1130	720
30	1590	779	740	1650	---	3200	5190	19500	5940	2500	1250	702
31	1470	---	780	1580	---	3100	---	19900	---	2530	1290	---
TOTAL	35596	29766	48219	74970	43550	92970	111150	269820	243560	129830	54650	31486
MEAN	1148	992	1555	2418	1555	2999	3705	8704	8119	4188	1763	1050
MAX	1990	1420	4960	5800	2490	4580	6830	19900	17800	7260	2830	1680
MIN	740	696	700	820	1210	2210	2270	5030	4650	2500	1080	702
AC-FT	70600	59040	95640	148700	86380	184400	220500	535200	483100	257500	108400	62450

CAL YR 1982 TOTAL 1294346 MEAN 3546 MAX 18300 MIN 580 AC-FT 2567000
WTR YR 1983 TOTAL 1165567 MEAN 3193 MAX 19900 MIN 696 AC-FT 2312000

AILABLE

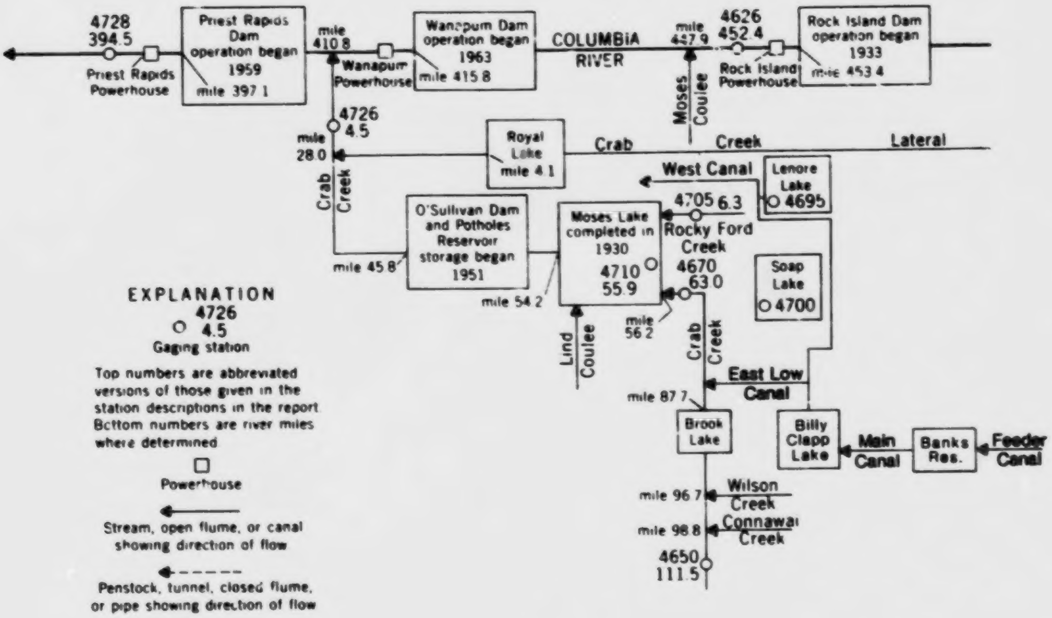
4728
394.5
Priest Rapids Powerhouse
Priest Rapids Dam operation began 1959
mile 397.1
mile 410.8
Wanapum Powerhouse
Wanapum Dam operation began 1963
mile 415.8
COLUMBIA RIVER
mile 447.9
4626
452.4
Rock Island Powerhouse
Rock Island Dam operation began 1933
mile 453.4
Moses Coulee
4726
4.5
mile 28.0
Royal Lake
mile 4.1
Crab Creek Lateral
Crab Creek
West Canal
Lenore Lake
4695
4705 6.3
Rocky Ford Creek
O'Sullivan Dam and Potholes Reservoir storage began 1951
mile 45.8
Moses Lake completed in 1930
4710
55.9
mile 54.2
4670
63.0
mile 56.2
Soap Lake
4700
Lind Coulee
Crab Creek
East Low Canal
mile 87.7
Brook Lake
Billy Clapp Lake
Main Canal
Banks Res.
Feeder Canal
mile 96.7
Wilson Creek
mile 98.8
Connawai Creek
4650
111.5
EXPLANATION
4726
4.5
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 26.—Gaging stations in Columbia River basin from Rock Island Dam to Priest Rapids gage.

12462500 WENATCHEE RIVER AT MONITOR, WA

LOCATION.--Lat 47°29'38", long 120°25'24", in NE¼SW¼ sec.11, T.23 N., R.19 E., Chelan County, Hydrologic Unit 17020011, on right bank 1.0 mi north of Monitor, 3.5 mi downstream from Mission Creek, and at mile 7.0.

DRAINAGE AREA.--1,301 mi².

PERIOD OF RECORD.--August to November 1897, October 1962 to current year. Published as "near Wenatchee" 1897.

GAGE.--Water-stage recorder. Altitude of gage is 680 ft, from topographic map. Aug. 7 to Nov. 7, 1897, nonrecording gage 1 mi downstream at different datum.

REMARKS.--Records excellent. No regulation. Diversions for irrigation of about 25,000 acres above station. Chelan County Public Utility District No. 1 gage-height telemeter at station.

AVERAGE DISCHARGE.--21 years, 3,380 ft³/s, 2,449,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,600 ft³/s Dec. 27, 1980, gage height, 27.23 ft; minimum, 357 ft³/s Oct. 12, 1979, gage height, 17.01 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,700 ft³/s May 31, gage height, 25.90 ft; minimum, 705 ft³/s Nov. 24, gage height, 17.45 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	858	1590	899	940	1750	2660	3620	6390	19500	5860	2720	1300
2	825	1570	890	980	1680	2880	3490	7010	17300	5700	2790	1520
3	841	1480	1470	1040	1620	2840	3280	7010	15000	5280	2560	1560
4	881	1420	5480	1100	1560	2860	3100	6990	12900	4910	2330	1390
5	829	1450	4400	1300	1510	2840	2940	7220	11200	4970	2170	1260
6	796	1510	3530	1700	1500	2790	2910	7380	10300	5330	2090	1130
7	806	1440	2830	2240	1470	2960	3010	7320	10500	4950	2010	1040
8	971	1360	2360	4060	1450	3130	3080	6930	11500	4400	1950	970
9	1060	1290	2170	4970	1420	4160	3030	6320	12200	3960	2040	910
10	1120	1220	1910	5460	1390	5910	2940	5770	11100	3660	2110	881
11	1160	1180	1720	6650	1400	6200	2830	5550	9940	3580	2440	1620
12	1190	1130	1670	5720	1400	5700	2690	5600	8570	4320	2610	1650
13	1180	1130	1650	4820	1440	5580	2600	5840	7620	6100	2240	1420
14	1140	1050	1660	4140	1460	5330	2530	6300	7190	7700	1980	1290
15	1110	1010	1590	3660	1460	4840	2530	6320	7980	6800	1790	1220
16	1090	1070	1620	3280	1470	4460	2630	6010	8040	5500	1620	1140
17	1090	1110	1630	3000	1630	4160	2880	6010	7760	4620	1470	1060
18	1140	1150	1560	2770	1910	3920	3260	6150	8010	4200	1380	1040
19	1090	1110	1510	2630	1880	3700	3910	6490	7190	3960	1290	1050
20	1040	1080	1470	2440	1830	3530	4820	7350	6270	4040	1220	1010
21	1030	1030	1420	2270	1800	3400	5790	9500	5550	4000	1140	960
22	1450	950	1380	2150	1910	3350	6220	11400	5080	3720	1070	940
23	2200	835	1320	2080	2350	3490	6540	12400	4970	3640	1050	900
24	2050	786	1230	2020	2940	3440	7790	13400	5110	3900	1110	881
25	1870	845	1200	1970	3240	3310	7820	14300	4930	3770	1080	843
26	1880	875	1170	1990	3190	3210	6960	15000	5040	3390	1020	815
27	1970	902	1000	2150	3060	3150	6230	15100	5480	3000	1020	797
28	1870	911	840	2090	2910	3080	5820	16100	6080	2770	1060	779
29	1900	929	800	1990	---	3390	5600	18800	6490	2630	1100	761
30	1780	929	840	1900	---	3940	5790	21400	6320	2500	1240	743
31	1660	---	900	1810	---	3790	---	21700	---	2500	1280	---
TOTAL	39877	34342	54119	85320	52630	118200	126660	299060	265120	135660	52980	32880
MEAN	1286	1145	1746	2752	1880	3813	4222	9647	8837	4376	1709	1096
MAX	2200	1590	5480	6650	3240	6200	7820	21700	19500	7700	2790	1650
MIN	796	786	800	940	1390	2790	2530	5550	4930	2500	1020	743
AC-FT	79100	68120	107300	169200	104400	234400	251200	593200	525900	269100	105100	65220

CAL YR 1982 TOTAL 1417793 MEAN 3884 MAX 20100 MIN 640 AC-FT 2812000
WTR YR 1983 TOTAL 1296848 MEAN 3553 MAX 21700 MIN 743 AC-FT 2572000

12462600 COLUMBIA RIVER BELOW ROCK ISLAND DAM, WA

LOCATION.--Lat 47°19'57", long 120°04'48", in NE¼NW¼ sec.9, T.21 N., R.22 E., Douglas County, Hydrologic Unit 17020010, on left bank 1.0 mi downstream from Rock Island Dam, 2.0 mi downstream from Rock Island Creek, 12 mi southeast of Wenatchee, and at mile 452.4.

DRAINAGE AREA.--89,400 mi², approximately.

PERIOD OF RECORD.--January to December 1910 (gage heights only), May 1913 to December 1916, October 1930 to current year. Published as "at Wenatchee" January 1910 to December 1916, and as "at Trinidad" October 1930 to May 1961.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1916, nonrecording gage 1.2 mi upstream from highway bridge at Wenatchee, at mile 466.3, at datum 583 ft National Geodetic Vertical Datum of 1929. Jan. 1 to Dec. 31, 1916, nonrecording gage on pier of highway bridge at Wenatchee, at mile 465.1, at datum 579.30 ft National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to May 31, 1961, water-stage recorder 0.5 mi southwest of Trinidad, at mile 441.7, at datum 499.3 ft National Geodetic Vertical Datum of 1929 (river-profile survey). Since May 21, 1963, auxiliary water-stage recorder 2.0 mi downstream at same datum.

REMARKS.--Records fair. Discharge for Oct. 1-8, 12-21, 25-29, Nov. 1-12, 23, 24, Dec. 18, 19, Dec. 23 to Jan. 5, 8-14, Jan. 22 to Feb. 6, Mar. 1-6, July 11-31, Aug. 27, 30, 31 and Sept. 28-30 provided by Corps of Engineers N.P.D. Reservoir Control Center. Flow regulated by nine major reservoirs and numerous small reservoirs and powerplants. Diversion by Feeder Canal (see sta 12435500) for Columbia Basin project and for irrigation of about 380,000 acres in the United States and an additional 35,000 acres in Canada.

AVERAGE DISCHARGE.--56 years (water years 1914-16, 1931-83), 121,500 ft³/s, 88,030,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, from floodmarks at Wenatchee.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 234,000 ft³/s Mar. 23; maximum elevation, 580.57 ft Mar. 22; minimum daily discharge, 46,300 ft³/s Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61700	102000	81100	92800	134000	197000	194000	167000	160000	107000	180000	133000
2	59900	120000	81900	95500	138000	193000	152000	159000	193000	72600	149000	101000
3	59900	108000	69500	114000	130000	201000	147000	173000	189000	72000	140000	62200
4	73900	100000	76400	115000	146000	195000	162000	162000	179000	92400	140000	57800
5	72800	93000	85900	123000	163000	196000	171000	172000	168000	108000	149000	67200
6	72800	93400	95600	104000	162000	186000	164000	175000	168000	126000	154000	99100
7	80200	100000	97900	71500	160000	176000	132000	159000	177000	135000	146000	85200
8	77000	104000	110000	73300	168000	192000	143000	150000	177000	115000	168000	85300
9	63800	105000	120000	62900	158000	181000	141000	169000	173000	104000	152000	84900
10	62400	99900	116000	99600	136000	166000	154000	177000	160000	104000	151000	67800
11	74800	111000	82300	86000	119000	144000	161000	170000	134000	124000	142000	49600
12	74200	113000	71900	110000	109000	164000	156000	162000	139000	128000	117000	95500
13	85900	85600	94600	126000	115000	167000	175000	154000	140000	123000	113000	98300
14	78800	90200	101000	134000	139000	149000	172000	154000	133000	135000	111000	81100
15	79000	102000	96400	134000	125000	206000	165000	146000	137000	125000	120000	80900
16	62900	93600	89600	131000	110000	199000	146000	153000	128000	155000	141000	81600
17	73900	91700	90900	128000	115000	209000	129000	158000	120000	172000	145000	65200
18	95400	94900	75600	121000	129000	214000	141000	166000	121000	166000	139000	81000
19	90500	84600	88400	117000	90500	221000	152000	161000	104000	159000	141000	97000
20	101000	76100	111000	127000	127000	224000	164000	160000	123000	166000	127000	80100
21	106000	77500	108000	121000	146000	214000	169000	147000	129000	171000	111000	87300
22	88300	101000	84900	124000	187000	228000	154000	157000	127000	171000	126000	95000
23	71300	108000	64600	126000	190000	234000	153000	163000	136000	140000	99200	77500
24	63300	123000	71500	118000	180000	220000	180000	172000	140000	135000	89800	58800
25	91600	103000	59800	131000	192000	224000	191000	179000	131000	171000	95900	46300
26	89600	94700	78100	115000	177000	221000	162000	176000	119000	173000	79200	82400
27	84900	94400	103000	117000	204000	217000	185000	183000	121000	167000	55000	80300
28	87700	88900	98200	127000	180000	225000	184000	169000	113000	181000	53100	81000
29	98900	109000	110000	104000	---	222000	170000	194000	106000	169000	92300	80600
30	93400	112000	112000	109000	---	218000	170000	196000	108000	174000	103000	77200
31	88800	---	104000	126000	---	200000	---	205000	---	158000	127000	---
TOTAL	2464600	2979500	2830100	3483600	4129500	6203000	4839000	5188000	4253000	4299000	3856500	2420200
MEAN	79500	99320	91290	112400	147500	200100	161300	167400	141800	138700	124400	80670
MAX	106000	123000	120000	134000	204000	234000	194000	205000	193000	181000	180000	133000
MIN	59900	76100	59800	62900	90500	144000	129000	146000	104000	72000	53100	46300
AC-FT	4889000	5910000	5614000	6910000	8191000	12304000	9598000	10290000	8436000	8527000	7649000	4800000

CAL YR 1982 TOTAL 49203100 MEAN 134800 MAX 230000 MIN 52200 AC-FT 97594000
WTR YR 1983 TOTAL 46946000 MEAN 128600 MAX 234000 MIN 46300 AC-FT 93116992

12465000 CRAB CREEK AT IRBY, WA

LOCATION.--Lat 47°21'38", long 118°50'56", in NW¼NW¼ sec.31, T.22 N., R.32 E., Lincoln County, Hydrologic Unit 17020013, on right bank 8 ft upstream from highway bridge at Irby, 5.4 mi downstream from Lake Creek, 7.5 mi west of Odessa, and at mile 11.5.

DRAINAGE AREA.--1,042 mi².

PERIOD OF RECORD.--September 1942 to current year. Chemical analyses October 1961 to September 1962.

REVISED RECORDS.--WSP 1446: 1949-51. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,385.30 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Pumpage from ground-water wells for irrigation has been on the increase above the station since 1964. No regulation.

AVERAGE DISCHARGE.--41 years, 71.9 ft³/s, 52,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,370 ft³/s Feb. 27, 1957, gage height, 11.94 ft; no flow several days during 1969, 1977, 1978, 1979, and 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 271 ft³/s Jan. 8, gage height, 3.27 ft, no peak above base of 300 ft³/s; minimum daily discharge, 0.90 ft³/s Dec. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	3.7	1.6	1.0	49	146	153	88	40	23	16	10
2	3.3	3.7	1.6	1.0	49	146	152	86	39	23	17	10
3	3.7	3.7	1.6	1.1	50	146	154	84	38	22	16	9.6
4	3.3	3.7	1.9	1.2	50	144	154	82	36	21	16	9.6
5	3.3	3.7	1.6	1.3	50	144	151	80	35	21	16	9.6
6	3.3	3.7	1.6	1.4	52	144	144	82	34	21	15	9.6
7	3.3	3.7	1.4	9.6	53	142	139	86	33	21	15	9.6
8	3.7	3.7	1.3	142	53	142	135	90	32	21	15	9.6
9	3.3	3.3	1.2	73	55	144	135	86	31	20	15	8.2
10	3.3	3.7	1.1	142	56	142	130	84	30	20	14	8.2
11	3.3	3.7	1.2	135	55	144	128	80	30	20	14	8.2
12	2.9	4.1	1.2	121	65	148	126	78	30	20	14	7.5
13	2.9	2.9	1.3	107	75	148	124	76	30	20	14	7.5
14	2.5	2.9	1.4	95	85	145	121	74	30	20	13	7.5
15	1.9	2.9	1.9	84	100	146	117	70	30	20	13	7.5
16	1.9	2.9	1.9	75	115	146	115	68	29	19	14	7.5
17	1.9	3.3	1.6	68	121	146	115	66	27	19	13	7.5
18	2.5	3.3	1.4	64	121	144	113	64	26	19	13	7.5
19	2.9	2.5	1.4	61	130	139	111	62	25	19	13	7.5
20	2.9	2.2	1.4	56	139	137	109	60	24	19	13	7.5
21	3.3	2.2	1.4	53	139	134	107	58	23	19	13	7.5
22	3.3	2.2	1.4	50	144	133	105	56	23	18	13	6.8
23	2.9	1.9	1.4	49	146	130	105	54	24	18	12	6.8
24	2.9	1.6	1.3	47	146	132	99	52	24	18	12	6.8
25	2.5	1.6	1.3	45	146	130	97	50	23	18	11	6.2
26	3.3	1.6	1.3	45	146	130	95	49	23	17	11	6.2
27	3.3	1.6	1.1	46	146	131	93	48	23	17	11	5.6
28	4.1	1.6	1.0	45	146	129	93	46	22	17	11	5.6
29	3.3	1.6	.90	47	---	136	91	44	23	17	11	5.6
30	3.3	1.9	1.0	47	---	135	87	43	22	16	11	5.1
31	3.3	---	1.0	47	---	144	---	42	---	16	10	---
TOTAL	94.9	85.1	42.70	1761.6	2682	4347	3598	2088	859	599	415	231.9
MEAN	3.06	2.84	1.38	56.8	95.8	140	120	67.4	28.6	19.3	13.4	7.73
MAX	4.1	4.1	1.9	142	146	148	154	90	40	23	17	10
MIN	1.9	1.6	.90	1.0	49	129	87	42	22	16	10	5.1
AC-FT	188	169	85	3490	5320	8620	7140	4140	1700	1190	823	460

CAL YR 1982 TOTAL 16818.90 MEAN 46.1 MAX 1660 MIN .90 AC-FT 33360
WTR YR 1983 TOTAL 16804.20 MEAN 46.0 MAX 154 MIN .90 AC-FT 33330

12467000 CRAB CREEK NEAR MOSES LAKE, WA

LOCATION.--Lat 47°11'22", long 119°15'53", in NW¼NE¼ sec.35, T.20 N., R.28 E., Grant County, Hydrologic Unit 17020015, on left bank at downstream side of highway bridge, 3.0 mi upstream from Parker Horn, 4.0 mi north of town of Moses Lake, and at mile 63.0.

DRAINAGE AREA.--2,228 mi², of which 219 mi² in the vicinity of Long Lake Reservoir is noncontributing.

PERIOD OF RECORD.--September 1942 to current year. Chemical analyses October 1961 to September 1962.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,070.39 ft U.S. Bureau of Reclamation datum. Prior to July 14, 1956, at site 300 ft upstream at same datum.

REMARKS.--Records excellent except those for discharges less than 15 ft³/s, which are fair. Numerous small diversions for irrigation and domestic use above station. Most of natural flow from upper basin passes this station underground. No known regulation. Since 1952, return flow from irrigation on Columbia Basin project has increased runoff during summer months.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft³/s Feb. 28, 1957, gage height, 6.81 ft; no flow for several months each year prior to 1952 and part of each day Jan. 14, 15, 1953.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 93 ft³/s July 25, Sept. 18, maximum gage height, 2.94 ft Sept. 18; minimum, 13 ft³/s Feb. 5, gage height, 1.88 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	52	34	18	15	65	71	52	52	70	69	80
2	70	50	33	18	15	62	80	52	53	80	68	79
3	68	49	35	18	15	60	81	53	52	73	68	78
4	67	48	31	19	14	59	79	53	53	[illegible]	69	78
5	66	47	30	19	14	57	79	52	53	70	68	78
6	67	45	30	19	15	58	79	52	54	75	68	78
7	68	44	29	21	16	57	81	56	53	76	69	76
8	66	43	26	35	16	57	79	53	54	76	70	76
9	66	42	25	23	18	63	78	51	56	74	72	76
10	66	41	24	23	24	67	79	48	59	72	72	78
11	65	40	23	20	20	62	80	47	60	70	72	79
12	63	40	24	18	18	55	80	47	61	70	68	78
13	61	39	24	18	17	69	79	49	58	74	69	76
14	63	38	25	17	16	76	78	49	58	74	70	76
15	61	37	30	16	17	74	77	51	60	73	72	76
16	59	38	43	15	19	71	75	49	60	73	73	78
17	59	43	41	16	23	72	73	48	60	73	74	80
18	59	47	33	17	21	74	73	49	59	73	73	84
19	58	44	30	23	18	75	72	50	59	74	73	84
20	59	40	31	23	17	74	70	49	59	75	73	81
21	58	37	34	20	16	74	68	49	60	74	74	83
22	63	34	35	19	17	74	65	49	61	74	75	81
23	61	36	29	19	17	79	61	50	64	73	76	80
24	59	31	25	19	17	77	66	50	64	75	78	80
25	56	30	24	18	17	75	65	51	62	84	78	79
26	58	31	23	21	27	72	62	50	62	79	76	78
27	55	32	21	21	55	75	60	49	52	76	76	75
28	56	34	20	18	65	72	57	49	62	75	78	75
29	69	37	19	17	---	81	54	48	65	73	79	74
30	57	38	19	17	---	83	52	48	65	72	80	68
31	54	---	18	16	---	75	---	49	---	69	79	---
TOTAL	1927	1207	868	601	579	2144	2153	1552	1760	2288	2259	2342
MEAN	62.2	40.2	28.0	19.4	20.7	69.2	71.8	50.1	58.7	73.8	72.9	78.1
MAX	70	52	43	35	65	83	81	56	65	84	80	84
MIN	54	30	18	15	14	55	52	47	52	69	68	68
AC-FT	3820	2390	1720	1190	1150	4250	4270	3080	3490	4540	4480	4650

CAL YR 1982	TOTAL	20052	MEAN	54.9	MAX	316	MIN	13	AC-FT	39770
WTR YR 1983	TOTAL	19680	MEAN	53.9	MAX	84	MIN	14	AC-FT	39040

12469500 LENORE LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°30'52", long 119°30'06", in SE¼SW¼ sec.1, T.23 N., R.26 E., Grant County, Hydrologic Unit 17020014, on east shore 1,000 ft downlake from outlet gate on Alkali Lake, and 8.8 mi north of town of Soap Lake.

DRAINAGE AREA.--367 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--July 1936, March 1938 to December 1956 (fragmentary), January 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Dec. 20, 1956, nonrecording gages 0.90 mi uplake at same datum.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,087.73 ft June 12, 1953; minimum, 1,072.72 ft Jan. 2, 1959 (affected by wind).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,092.2 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,081.84 ft Mar. 29, 30, Apr. 2; minimum, 1,077.94 ft Oct. 18.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1078.01	1078.10	1078.34	1079.00	1079.97	1081.05	1081.80	1081.53	1080.81	1080.17	1079.59	1079.02
2	1078.01	1078.10	1078.35	1079.03	1079.99	1081.09	1081.82	1081.50	1080.79	1080.14	1079.55	1079.00
3	1078.00	1078.10	1078.41	1079.06	1080.02	1081.12	1081.80	1081.48	1080.78	1080.11	1079.50	1079.00
4	1078.00	1078.11	1078.40	1079.11	1080.04	1081.14	1081.80	1081.46	1080.77	1080.07	1079.45	1078.97
5	1077.99	1078.11	1078.41	1079.13	1080.07	1081.18	1081.80	1081.45	1080.75	1080.04	1079.42	1078.96
6	1077.99	1078.12	1078.41	1079.16	1080.10	1081.21	1081.79	1081.44	1080.74	1080.01	1079.38	1078.95
7	1078.00	1078.11	1078.42	1079.18	1080.15	1081.25	1081.78	1081.44	1080.70	1079.96	1079.34	1078.93
8	1077.98	1078.10	1078.43	1079.21	1080.18	1081.28	1081.77	1081.44	1080.68	1079.93	1079.31	1078.89
9	1077.98	1078.10	1078.44	1079.23	1080.22	1081.34	1081.76	1081.43	1080.64	1079.89	1079.29	1078.84
10	1077.98	1078.11	1078.45	1079.25	1080.25	1081.41	1081.76	1081.40	1080.61	1079.84	1079.27	1078.80
11	1077.98	1078.11	1078.46	1079.27	1080.29	1081.44	1081.75	1081.39	1080.57	1079.81	1079.24	1078.77
12	1077.99	1078.11	1078.49	1079.29	1080.33	1081.48	1081.72	1081.36	1080.57	1079.79	1079.20	1078.74
13	1077.99	1078.11	1078.51	1079.31	1080.37	1081.56	1081.70	1081.35	1080.57	1079.75	1079.18	1078.70
14	1077.99	1078.12	1078.54	1079.33	1080.40	1081.62	1081.70	1081.33	1080.58	1079.71	1079.15	1078.66
15	1078.00	1078.12	1078.59	1079.35	1080.43	1081.66	1081.69	1081.31	1080.60	1079.66	1079.11	1078.63
16	1078.01	1078.14	1078.63	1079.38	1080.49	1081.70	1081.68	1081.28	1080.59	1079.63	1079.06	1078.58
17	1077.99	1078.17	1078.66	1079.40	1080.55	1081.74	1081.67	1081.25	1080.59	1079.63	1079.02	1078.53
18	1077.97	1078.21	1078.68	1079.43	1080.59	1081.74	1081.66	1081.21	1080.60	1079.64	1079.00	1078.48
19	1077.98	1078.24	1078.71	1079.47	1080.63	1081.74	1081.65	1081.20	1080.58	1079.63	1079.00	1078.45
20	1077.98	1078.25	1078.74	1079.51	1080.65	1081.73	1081.63	1081.17	1080.56	1079.65	1078.99	1078.42
21	1077.99	1078.23	1078.79	1079.54	1080.69	1081.73	1081.62	1081.14	1080.52	1079.65	1078.98	1078.40
22	1078.03	1078.23	1078.84	1079.57	1080.73	1081.73	1081.60	1081.11	1080.48	1079.65	1078.97	1078.37
23	1078.03	1078.23	1078.85	1079.60	1080.76	1081.77	1081.61	1081.09	1080.45	1079.66	1078.98	1078.34
24	1078.03	1078.24	1078.87	1079.63	1080.80	1081.78	1081.65	1081.06	1080.42	1079.67	1078.97	1078.31
25	1078.04	1078.25	1078.89	1079.67	1080.83	1081.78	1081.61	1081.03	1080.37	1079.69	1078.98	1078.28
26	1078.07	1078.25	1078.91	1079.75	1080.94	1081.77	1081.60	1081.00	1080.34	1079.69	1078.98	1078.25
27	1078.05	1078.26	1078.92	1079.83	1080.97	1081.78	1081.59	1080.97	1080.30	1079.69	1078.97	1078.19
28	1078.06	1078.28	1078.94	1079.86	1081.01	1081.77	1081.58	1080.94	1080.27	1079.70	1078.98	1078.14
29	1078.09	1078.31	1078.95	1079.89	---	1081.80	1081.56	1080.91	1080.24	1079.68	1078.99	1078.10
30	1078.09	1078.33	1078.97	1079.91	---	1081.81	1081.54	1080.87	1080.21	1079.65	1079.00	1078.06
31	1078.09	---	1078.99	1079.94	---	1081.79	---	1080.84	---	1079.61	1079.00	---
MEAN	1078.01	1078.18	1078.64	1079.43	1080.44	1081.55	1081.69	1081.24	1080.56	1079.79	1079.16	1078.59
MAX	1078.09	1078.33	1078.99	1079.94	1081.01	1081.81	1081.82	1081.53	1080.81	1080.17	1079.59	1079.02
MIN	1077.97	1078.10	1078.34	1079.00	1079.97	1081.05	1081.54	1080.84	1080.21	1079.61	1078.97	1078.06

CAL YR 1982 MEAN 1078.75 MAX 1080.02 MIN 1077.97
WTR YR 1983 MEAN 1079.77 MAX 1081.82 MIN 1077.97

12473000 SOAP LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°24'11", long 119°29'11", in NW¼SW¼ sec.18, T.22 N., R.27 E., Grant County, Hydrologic Unit 17020014, on east shore 0.9 mi north of town of Soap Lake.

DRAINAGE AREA.--413 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--May to August 1936, March 1938 to February 1957 (fragmentary), March 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Feb. 4, 1953, nonrecording gage at site 0.2 mi uplake. Feb. 4, 1953, to June 8, 1954, nonrecording gage at site 1.5 mi uplake and June 9, 1954, to June 21, 1957, water-stage recorder at site 0.2 mi uplake.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,079.20 ft Jan. 28, 1953; minimum observed, 1,070.87 ft Oct. 21, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,083.1 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,075.52 ft Apr. 2, 3; minimum, 1,073.71 ft Oct. 6.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1073.73	1073.92	1074.14	1074.47	1074.84	1075.21	1075.47	1075.42	1075.25	1074.90	1074.72	1074.60
2	1073.74	1073.92	1074.16	1074.48	1074.84	1075.21	1075.50	1075.41	1075.24	1074.90	1074.71	1074.59
3	1073.73	1073.93	1074.17	1074.49	1074.85	1075.22	1075.50	1075.39	1075.21	1074.89	1074.69	1074.58
4	1073.73	1073.94	1074.18	1074.53	1074.86	1075.22	1075.49	1075.39	1075.19	1074.88	1074.69	1074.56
5	1073.73	1073.94	1074.19	1074.53	1074.86	1075.23	1075.49	1075.39	1075.16	1074.88	1074.69	1074.53
6	1073.73	1073.93	1074.20	1074.54	1074.88	1075.23	1075.49	1075.39	1075.14	1074.88	1074.69	1074.52
7	1073.74	1073.94	1074.20	1074.55	1074.91	1075.25	1075.50	1075.41	1075.14	1074.85	1074.69	1074.51
8	1073.73	1073.94	1074.20	1074.55	1074.92	1075.26	1075.48	1075.41	1075.14	1074.85	1074.69	1074.50
9	1073.74	1073.94	1074.20	1074.56	1074.94	1075.29	1075.48	1075.42	1075.12	1074.83	1074.69	1074.49
10	1073.74	1073.94	1074.20	1074.57	1074.95	1075.31	1075.48	1075.41	1075.11	1074.81	1074.69	1074.49
11	1073.75	1073.94	1074.21	1074.57	1074.97	1075.32	1075.48	1075.41	1075.09	1074.80	1074.69	1074.49
12	1073.76	1073.94	1074.21	1074.58	1074.98	1075.32	1075.48	1075.40	1075.08	1074.80	1074.68	1074.50
13	1073.76	1073.95	1074.23	1074.58	1074.99	1075.35	1075.47	1075.40	1075.07	1074.80	1074.68	1074.51
14	1073.77	1073.96	1074.25	1074.59	1074.99	1075.37	1075.47	1075.39	1075.07	1074.79	1074.68	1074.50
15	1073.78	1073.96	1074.29	1074.60	1075.00	1075.37	1075.47	1075.39	1075.07	1074.77	1074.67	1074.51
16	1073.78	1073.97	1074.32	1074.60	1075.02	1075.37	1075.47	1075.38	1075.06	1074.76	1074.65	1074.50
17	1073.79	1074.00	1074.34	1074.62	1075.06	1075.37	1075.47	1075.37	1075.05	1074.75	1074.64	1074.47
18	1073.78	1074.04	1074.35	1074.63	1075.07	1075.37	1075.47	1075.36	1075.03	1074.75	1074.63	1074.48
19	1073.78	1074.06	1074.36	1074.66	1075.07	1075.37	1075.46	1075.35	1075.01	1074.75	1074.62	1074.48
20	1073.78	1074.07	1074.39	1074.68	1075.08	1075.37	1075.47	1075.34	1074.99	1074.74	1074.59	1074.48
21	1073.78	1074.08	1074.42	1074.69	1075.09	1075.37	1075.46	1075.33	1074.98	1074.73	1074.59	1074.49
22	1073.82	1074.07	1074.46	1074.70	1075.10	1075.37	1075.46	1075.33	1074.97	1074.73	1074.58	1074.50
23	1073.83	1074.07	1074.46	1074.71	1075.11	1075.40	1075.48	1075.33	1074.96	1074.73	1074.58	1074.50
24	1073.84	1074.06	1074.46	1074.73	1075.11	1075.40	1075.50	1075.32	1074.95	1074.73	1074.58	1074.51
25	1073.85	1074.06	1074.46	1074.74	1075.12	1075.40	1075.49	1075.32	1074.95	1074.74	1074.58	1074.52
26	1073.85	1074.07	1074.46	1074.78	1075.18	1075.40	1075.48	1075.30	1074.94	1074.73	1074.58	1074.53
27	1073.85	1074.09	1074.47	1074.80	1075.19	1075.41	1075.46	1075.30	1074.93	1074.73	1074.58	1074.51
28	1073.87	1074.09	1074.47	1074.81	1075.20	1075.41	1075.43	1075.30	1074.93	1074.73	1074.58	1074.50
29	1073.91	1074.12	1074.47	1074.82	---	1075.45	1075.43	1075.29	1074.92	1074.72	1074.59	1074.49
30	1073.91	1074.13	1074.47	1074.82	---	1075.46	1075.42	1075.27	1074.91	1074.72	1074.59	1074.48
31	1073.92	---	1074.47	1074.83	---	1075.46	---	1075.26	---	1074.72	1074.60	---
MEAN	1073.79	1074.00	1074.32	1074.64	1075.01	1075.34	1075.47	1075.36	1075.06	1074.79	1074.64	1074.51
MAX	1073.92	1074.13	1074.47	1074.83	1075.20	1075.46	1075.50	1075.42	1075.25	1074.90	1074.72	1074.60
MIN	1073.73	1073.92	1074.14	1074.47	1074.84	1075.21	1075.42	1075.26	1074.91	1074.72	1074.58	1074.47

WTR YR 1983 MEAN 1074.74 MAX 1075.50 MIN 1073.73

12470500 ROCKY FORD CREEK NEAR EPHRATA, WA

LOCATION.--Lat 47°18'46", long 119°26'40", in SW¼SW¼ sec.16, T.21 N., R.27 E., Grant County, Hydrologic Unit 17020015, on right bank 1.4 mi downstream from source at Rocky Ford Springs, 5.0 mi east of Ephrata, and 6.3 mi upstream from mouth.

DRAINAGE AREA.--458 mi², of which 446 mi² in vicinity of Banks and Soap Lakes is noncontributing.

PERIOD OF RECORD.--June 1909 to April 1910, July to December 1911, August 1942 to current year. Prior to January 1910, published as Upper Crab Creek near Ephrata.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,068.51 ft U.S. Bureau of Reclamation datum. Prior to Jan. 1, 1912, nonrecording gages at sites 4.5 mi to 5.5 mi downstream at different datums. Aug. 19, 1942, to May 23, 1945, water-stage recorder at site 3.5 mi downstream at datum 5.37 ft lower. May 23, 1945, to June 15, 1977, water-stage recorder at site 0.2 mi downstream at datum 3.53 ft lower.

REMARKS.--Records good. Base flow derived from Rocky Ford Springs, no known regulation or diversion.

AVERAGE DISCHARGE.--41 years (water years 1943-83), 76.2 ft³/s, 55,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 212 ft³/s Apr. 15-18, 1956, gage height, 3.58 ft datum then in use; minimum observed, 20 ft³/s Aug. 13-18, 1911.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 92 ft³/s Aug. 23, 26, 29, 30, Sept. 6, maximum gage height, 5.63 ft Aug. 8; minimum daily, 42 ft³/s Mar. 16, 17, minimum gage height, 5.05 ft Mar. 5-7, 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	62	61	53	49	44	44	48	66	71	85	90
2	68	62	60	54	49	44	44	49	64	71	85	91
3	67	63	60	54	49	43	44	49	64	75	80	91
4	66	63	61	53	48	43	43	48	64	75	84	91
5	67	63	59	53	48	43	44	50	64	75	84	90
6	67	64	59	53	49	43	44	50	64	77	84	92
7	66	64	58	53	49	43	44	51	65	77	86	90
8	66	64	58	53	48	43	44	51	68	77	84	90
9	66	63	58	53	48	43	44	52	67	77	84	90
10	66	64	57	53	48	43	44	53	68	78	90	90
11	66	63	57	53	48	43	44	53	67	79	84	91
12	64	63	57	53	48	43	44	54	67	72	85	89
13	64	63	57	53	48	43	44	55	65	77	89	90
14	64	62	57	52	47	43	45	56	66	78	90	89
15	64	62	57	52	47	43	45	56	68	78	87	88
16	64	62	57	52	47	42	45	55	68	79	90	89
17	63	63	56	51	47	42	45	55	68	79	90	90
18	65	64	56	52	47	43	46	56	68	79	90	90
19	65	62	56	52	47	43	46	57	69	80	91	89
20	66	63	56	52	46	43	45	58	70	80	90	89
21	66	63	56	52	45	43	46	58	72	78	91	88
22	66	62	56	52	45	43	46	61	72	79	91	88
23	66	62	55	52	45	43	46	61	72	81	92	87
24	65	62	55	52	45	43	46	61	71	83	91	87
25	65	62	55	52	44	43	46	62	71	84	91	87
26	64	62	55	52	45	43	46	62	71	83	92	86
27	64	62	54	52	44	44	47	62	71	82	91	85
28	64	61	54	51	44	44	47	62	71	84	91	85
29	63	61	54	51	---	45	47	63	71	88	92	84
30	62	61	53	50	---	44	48	64	72	84	92	84
31	63	---	53	50	---	44	---	64	---	85	91	---
TOTAL	2019	1877	1757	1620	1314	1339	1353	1736	2044	2445	2737	2660
MEAN	65.1	62.6	56.7	52.3	46.9	43.2	45.1	56.0	68.1	78.9	88.3	88.7
MAX	68	64	61	54	49	45	48	64	72	88	92	92
MIN	62	61	53	50	44	42	43	48	64	71	80	84
AC-FT	4000	3720	3490	3210	2610	2660	2680	3440	4050	4850	5430	5280

CAL YR 1982	TOTAL	19733	MEAN	54.1	MAX	68	MIN	37	AC-FT	39140
WTR YR 1983	TOTAL	22901	MEAN	62.7	MAX	92	MIN	42	AC-FT	45420

12471000 MOSES LAKE AT MOSES LAKE, WA

LOCATION.--Lat 47°06'11", long 119°19'02", in SW¼SW¼ sec.28, T.19 N., R.28 E., Grant County, Hydrologic Unit 17020015, on east shore 35 ft north of Interstate 90, 1.7 mi upstream from outlet, at town of Moses Lake, and at mile 55.9.

DRAINAGE AREA.--3,080 mi², of which 665 mi² is noncontributing.

PERIOD OF RECORD.--June 1909 to September 1914 and November 1936 to September 1945 (fragmentary), October 1945 to current year. Published as "at Neppel" 1912-14.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Apr. 3, 1910, nonrecording gage at site 0.6 mi northeast at different datum. Apr. 3, 1910, to Sept. 30, 1914, and Nov. 19, 1936, to Nov. 24, 1944, nonrecording gages at site 2.8 mi northeast at Parker Horn at various datums. Oct. 30, 1945, to Mar. 12, 1955, water-stage recorder at site near west shore on downstream side of bridge on U.S. Highway 10 at present datum.

REMARKS.--Elevation controlled between 1,041 ft and 1,047 ft by two outlet structures at south end of lake. Many small diversions for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,048.29 ft Mar. 10, 1950; minimum observed, 1,038.17 ft Aug. 27, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,047.26 ft Apr. 18; minimum, 1,043.88 ft Dec. 3.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1046.98	1046.76	1043.98	1044.24	1044.22	1044.31	1045.23	1046.80	1046.49	1046.95	1046.96	1047.00
2	1046.98	1046.64	1043.95	1044.24	1044.21	1044.31	1045.40	1046.81	1046.46	1046.97	1046.96	1047.00
3	1046.97	1046.47	1043.91	1044.25	1044.20	1044.33	1045.55	1046.81	1046.46	1046.98	1046.95	1047.01
4	1046.97	1046.32	1043.89	1044.26	1044.19	1044.34	1045.65	1046.84	1046.48	1047.00	1046.95	1047.03
5	1046.96	1046.16	1043.91	1044.25	1044.17	1044.35	1045.77	1046.85	1046.49	1047.00	1046.94	1047.01
6	1046.95	1046.01	1043.93	1044.25	1044.17	1044.37	1045.88	1046.87	1046.50	1046.99	1046.94	1047.01
7	1046.94	1045.87	1043.93	1044.31	1044.18	1044.39	1046.01	1046.91	1046.52	1046.98	1046.95	1047.00
8	1046.93	1045.73	1043.95	1044.28	1044.18	1044.41	1046.11	1046.94	1046.55	1046.96	1046.95	1046.99
9	1046.93	1045.58	1043.96	1044.27	1044.17	1044.45	1046.21	1046.95	1046.58	1046.96	1046.95	1046.98
10	1046.92	1045.44	1043.97	1044.27	1044.20	1044.48	1046.30	1046.97	1046.58	1046.95	1046.95	1046.98
11	1046.92	1045.32	1043.99	1044.27	1044.20	1044.50	1046.41	1046.98	1046.61	1046.94	1046.94	1046.99
12	1046.92	1045.20	1044.02	1044.27	1044.19	1044.53	1046.51	1046.99	1046.62	1046.94	1046.94	1046.99
13	1046.91	1045.09	1044.06	1044.26	1044.19	1044.56	1046.59	1047.00	1046.63	1046.94	1046.94	1046.99
14	1046.91	1044.99	1044.07	1044.25	1044.18	1044.59	1046.73	1047.01	1046.66	1046.93	1046.94	1046.99
15	1046.91	1044.89	1044.10	1044.24	1044.18	1044.60	1046.92	1047.02	1046.68	1046.93	1046.94	1046.99
16	1046.90	1044.80	1044.29	1044.24	1044.19	1044.63	1047.09	1047.03	1046.69	1046.93	1046.93	1046.98
17	1046.90	1044.73	1044.19	1044.24	1044.21	1044.64	1047.18	1047.03	1046.71	1046.93	1046.93	1046.96
18	1046.89	1044.68	1044.18	1044.24	1044.23	1044.65	1047.24	1047.03	1046.70	1046.93	1046.94	1046.98
19	1046.88	1044.61	1044.18	1044.25	1044.22	1044.65	1047.10	1046.98	1046.71	1046.93	1046.93	1046.96
20	1046.87	1044.54	1044.22	1044.26	1044.22	1044.67	1046.90	1046.95	1046.72	1046.91	1046.92	1046.95
21	1046.87	1044.48	1044.26	1044.26	1044.22	1044.68	1046.73	1046.91	1046.74	1046.91	1046.93	1046.95
22	1046.88	1044.41	1044.30	1044.26	1044.21	1044.70	1046.65	1046.86	1046.77	1046.92	1046.93	1046.94
23	1046.88	1044.33	1044.29	1044.25	1044.22	1044.72	1046.75	1046.83	1046.78	1046.92	1046.92	1046.93
24	1046.89	1044.27	1044.28	1044.25	1044.21	1044.75	1046.75	1046.80	1046.80	1046.93	1046.94	1046.91
25	1046.89	1044.21	1044.28	1044.25	1044.23	1044.75	1046.75	1046.77	1046.83	1046.94	1046.94	1046.90
26	1046.88	1044.16	1044.27	1044.27	1044.24	1044.76	1046.72	1046.73	1046.86	1046.95	1046.95	1046.88
27	1046.89	1044.12	1044.27	1044.26	1044.26	1044.77	1046.73	1046.69	1046.87	1046.96	1046.97	1046.87
28	1046.89	1044.09	1044.27	1044.25	1044.28	1044.78	1046.74	1046.66	1046.89	1046.96	1046.96	1046.84
29	1046.89	1044.06	1044.26	1044.25	---	1044.82	1046.75	1046.64	1046.92	1046.96	1046.98	1046.82
30	1046.85	1044.03	1044.26	1044.23	---	1044.93	1046.77	1046.59	1046.93	1046.97	1046.99	1046.80
31	1046.81	---	1044.25	1044.23	---	1045.07	---	1046.54	---	1046.97	1047.00	---
MEAN	1046.91	1045.07	1044.12	1044.26	1044.21	1044.60	1046.47	1046.86	1046.67	1046.95	1046.95	1046.95
MAX	1046.98	1046.76	1044.30	1044.31	1044.28	1045.07	1047.24	1047.03	1046.93	1047.00	1047.00	1047.03
MIN	1046.81	1044.03	1043.89	1044.23	1044.17	1044.31	1045.23	1046.54	1046.46	1046.91	1046.92	1046.80

CAL YR 1982 MEAN 1045.60 MAX 1047.12 MIN 1043.40
WTR YR 1983 MEAN 1045.84 MAX 1047.24 MIN 1043.89

12472600 CRAB CREEK NEAR BEVERLY, WA

LOCATION.--Lat 46°49'48", long 119°49'48", in NW¼SW¼ sec. 33, T.16 N., R.24 E., Grant County, Hydrologic Unit 17020015, on right bank 4.9 mi east of Beverly, and at mile 4.5.

DRAINAGE AREA.--4,842 mi², of which 665 mi² in the vicinity of Soap Lake is noncontributing.

PERIOD OF RECORD.--February 1959 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft, from topographic map.

REMARKS.--Records good. Many diversions above station for irrigation. Flow largely regulated by Potholes Reservoir 41.3 mi upstream. A major portion of flow is return flows, including transbasin diversions, from parts of the Columbia Basin project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 936 ft³/s Mar. 3, 1980, gage height, 6.46 ft; minimum, 10 ft³/s Jan. 10, 1963, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 344 ft³/s Oct. 1, gage height, 4.45 ft; minimum, 122 ft³/s June 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	342	290	211	185	221	239	205	202	144	222	271	307
2	335	285	202	187	216	235	206	202	138	222	269	307
3	330	280	204	190	208	222	204	210	143	236	255	299
4	329	275	199	193	202	211	211	210	135	253	238	289
5	322	270	193	197	199	208	216	201	139	268	225	295
6	317	265	206	217	198	208	230	209	154	277	225	300
7	312	260	219	238	203	209	230	219	157	269	233	297
8	308	255	202	269	208	208	239	233	158	248	247	301
9	308	250	196	261	217	214	233	235	162	222	259	299
10	306	248	192	212	244	233	228	231	165	214	259	289
11	306	245	187	211	254	219	226	239	169	220	259	273
12	308	242	189	200	237	199	224	242	184	223	271	271
13	312	240	191	197	227	209	219	244	202	226	274	271
14	315	235	194	195	217	222	218	234	224	233	273	269
15	315	230	200	192	213	200	214	219	235	239	277	271
16	311	225	238	193	224	190	211	209	252	242	285	261
17	307	225	300	198	237	183	209	206	231	246	286	264
18	307	220	296	205	260	179	206	200	220	250	278	275
19	313	220	246	223	261	179	199	190	218	246	271	290
20	318	225	241	233	245	179	195	174	213	236	262	302
21	323	230	264	223	229	177	184	155	213	235	260	317
22	328	225	285	216	225	177	172	152	212	230	264	323
23	330	225	274	212	226	194	175	162	213	227	267	328
24	330	230	242	215	235	205	178	166	215	229	271	329
25	325	230	220	216	242	199	196	165	224	231	274	332
26	320	225	214	225	263	194	209	170	230	241	283	329
27	315	225	208	246	268	197	209	165	239	248	291	317
28	310	220	199	239	250	195	209	160	249	254	291	324
29	300	220	199	226	---	218	207	155	250	254	292	315
30	295	219	195	225	---	244	204	155	230	259	289	301
31	290	---	190	224	---	222	---	152	---	266	297	---
TOTAL	9787	7234	6796	6663	6429	6368	6266	6067	5918	7466	8296	8945
MEAN	316	241	219	215	230	205	209	196	197	241	268	298
MAX	342	290	300	269	268	244	239	244	252	277	297	332
MIN	290	219	187	185	198	177	172	152	135	214	225	261
AC-FT	19410	14350	13480	13220	12750	12630	12430	12030	11740	14810	16460	17740

CAL YR 1982 TOTAL 79212 MEAN 217 MAX 343 MIN 134 AC-FT 157100
WTR YR 1983 TOTAL 86235 MEAN 236 MAX 342 MIN 135 AC-FT 171000

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°37'44", long 119°51'49", in SE¼NW¼ sec.7, T.13 N., R.24 E., Grant County, Hydrologic Unit 17020016, on left bank 2.6 mi downstream from Priest Rapids Dam, 14.7 mi south of Beverly, and at mile 394.5.

DRAINAGE AREA.--96,000 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1917 to current year. January 1917 to September 1930, at site 3.4 mi downstream, published as "at Vernita." October 1930 to July 27, 1959, at site 46.5 mi upstream, published as "at Trinidad."

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-82-2: 1965(m), 1971(m).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1930, nonrecording gages at site 3.4 mi downstream at datum 388.7 ft National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to July 27, 1959, water-stage recorder at site 46.5 mi upstream at datum 499.3 ft National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Water-discharge records excellent. Diversions for irrigation of about 500,000 acres above station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and power plants.

AVERAGE DISCHARGE.--66 years, 120,300 ft³/s, 87,160,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, based on information obtained at other points.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 307,000 ft³/s July 2, elevation, 417.55 ft; minimum, 36,900 ft³/s Oct. 2, elevation, 396.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74100	95600	80400	94200	134000	210000	194000	180000	159000	99700	182000	124000
2	56600	124000	88800	95900	139000	198000	155000	167000	200000	72600	155000	134000
3	59600	117000	79700	114000	134000	213000	147000	164000	186000	71200	143000	66200
4	77800	99800	62900	118000	140000	207000	159000	175000	190000	92100	142000	61700
5	71900	95000	78600	125000	153000	208000	171000	164000	180000	99000	152000	64700
6	74400	89800	97500	106000	177000	195000	175000	175000	159000	116000	157000	87400
7	77400	97600	96000	71400	164000	177000	139000	167000	189000	137000	145000	95600
8	77100	115000	108000	75100	158000	190000	148000	154000	178000	129000	164000	81700
9	60900	106000	115000	63100	168000	185000	136000	164000	175000	112000	153000	103000
10	60800	102000	118000	100000	140000	175000	150000	183000	167000	111000	156000	58600
11	75100	109000	82100	95500	133000	138000	164000	156000	143000	98100	143000	45600
12	74600	108000	73500	115000	118000	167000	159000	172000	141000	132000	130000	84900
13	87600	85500	92000	131000	121000	170000	172000	166000	140000	122000	124000	95600
14	94700	90700	101000	138000	130000	158000	171000	137000	132000	137000	119000	82800
15	82200	109000	103000	140000	134000	208000	167000	154000	134000	131000	113000	75300
16	67200	92800	88300	135000	115000	237000	154000	142000	129000	146000	136000	92600
17	72300	91600	94900	122000	110000	215000	138000	163000	128000	185000	148000	54900
18	98900	94500	68800	128000	126000	188000	136000	174000	124000	163000	144000	82200
19	85100	88300	83300	115000	121000	210000	152000	153000	114000	162000	140000	90400
20	104000	69700	112000	123000	111000	226000	153000	164000	109000	167000	133000	79800
21	103000	83700	106000	134000	135000	215000	179000	150000	122000	190000	121000	85900
22	92300	96100	84900	110000	137000	209000	158000	146000	123000	177000	121000	87200
23	68100	112000	66000	129000	194000	240000	141000	175000	132000	149000	122000	86500
24	65300	119000	72100	120000	179000	226000	180000	154000	138000	134000	101000	47400
25	78200	122000	62900	137000	185000	230000	198000	187000	141000	174000	94000	47200
26	87400	98600	74500	135000	183000	213000	168000	171000	127000	179000	81700	78200
27	90500	88500	101000	119000	196000	217000	195000	191000	134000	175000	58700	81300
28	92700	93600	103000	131000	182000	215000	194000	170000	115000	187000	53000	72400
29	106000	105000	109000	106000	---	215000	169000	201000	102000	181000	79300	83500
30	94000	102000	114000	110000	---	222000	160000	193000	109000	177000	106000	80500
31	82400	---	108000	124000	---	208000	---	217000	---	159000	128000	---
TOTAL	2492200	3001400	2825200	3560200	4117000	6255000	4882000	5229000	4320000	4369700	3943700	2411100
MEAN	80390	100000	91140	114800	147000	201800	162700	168700	144000	141000	127200	80370
MAX	106000	124000	118000	140000	196000	240000	198000	217000	200000	190000	182000	134000
MIN	56600	69700	62900	63100	110000	138000	136000	137000	102000	71200	53000	45600
AC-FT	4943000	5953000	5604000	7062000	8166000	12407000	9683000	10372000	8569000	8667000	7822000	4782000

CAL YR 1982 TOTAL 50495400 MEAN 138300 MAX 246000 MIN 54000 AC-FT 100158000
WTR YR 1983 TOTAL 47406500 MEAN 129900 MAX 240000 MIN 45600 AC-FT 94030992

BEST COPY AVAILABLE

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Water years 1980 to current year. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

INSTRUMENTATION.--Temperature recorder since December 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 20.0°C Aug. 25, 27, 1982; minimum, 2.0°C Feb. 11, 12, 1982.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 20.0°C Aug. 27, 28, Sept. 3; minimum, 2.5°C Feb. 7-11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.5	16.0	17.0	13.0	12.5	13.0	9.0	8.5	8.5	5.0	4.5	4.5
2	18.0	16.5	17.0	13.0	12.5	13.0	9.0	8.0	8.5	4.5	4.0	4.5
3	17.5	16.0	16.5	13.0	12.5	12.5	9.0	8.5	8.5	4.0	4.0	4.0
4	17.0	16.5	16.5	13.0	12.5	12.5	9.0	8.5	8.5	4.0	4.0	4.0
5	17.0	16.0	16.5	12.5	12.5	12.5	9.0	8.0	8.5	4.0	4.0	4.0
6	16.5	16.0	16.5	13.0	12.0	12.5	8.5	8.0	8.5	4.5	4.0	4.0
7	16.5	16.0	16.0	12.5	11.0	12.0	8.5	8.0	8.5	4.5	4.0	4.5
8	16.5	16.0	16.0	12.0	11.0	12.0	8.5	8.0	8.0	4.5	4.5	4.5
9	16.5	15.5	16.0	12.0	11.5	12.0	8.0	7.5	8.0	4.5	4.5	4.5
10	16.5	15.5	16.0	12.0	11.5	11.5	8.0	7.5	7.5	4.5	4.5	4.5
11	16.0	15.5	15.5	11.5	11.0	11.5	7.5	7.0	7.5	4.5	4.5	4.5
12	16.0	15.5	15.5	11.5	11.0	11.0	8.0	7.0	7.0	4.5	4.5	4.5
13	16.0	15.0	15.5	12.0	11.0	11.5	7.0	6.5	7.0	4.5	4.5	4.5
14	16.0	15.0	15.5	11.5	10.5	11.0	7.0	6.5	6.5	4.5	4.5	4.5
15	15.5	15.0	15.0	11.0	10.5	10.5	7.0	5.5	6.0	4.5	4.0	4.0
16	16.5	14.5	15.5	10.5	10.0	10.5	6.5	6.0	6.0	4.0	4.0	4.0
17	15.5	14.5	15.0	10.5	10.0	10.5	7.0	6.0	6.5	4.0	4.0	4.0
18	15.0	13.5	14.5	10.5	10.0	10.0	7.5	6.5	7.0	4.0	3.5	4.0
19	15.0	13.5	14.5	10.5	9.5	10.0	7.0	6.0	6.5	4.0	3.5	3.5
20	14.5	13.5	14.0	11.0	10.0	10.5	7.0	6.0	6.5	4.0	3.5	3.5
21	14.5	13.5	14.0	10.5	9.5	10.0	6.5	6.0	6.5	4.0	3.5	3.5
22	14.5	13.5	14.0	10.0	9.0	9.5	6.5	6.0	6.5	4.5	3.5	4.0
23	15.0	14.0	14.5	9.5	8.5	9.0	6.5	6.0	6.5	4.0	3.5	3.5
24	15.5	13.5	14.5	9.5	8.5	9.0	6.5	6.0	6.0	4.0	3.5	4.0
25	14.5	14.0	14.0	9.0	8.5	9.0	6.0	6.0	6.0	4.0	3.5	4.0
26	14.0	13.5	13.5	9.0	8.5	8.5	6.0	5.5	6.0	4.0	3.5	3.5
27	14.0	13.0	13.5	9.5	8.5	9.0	6.0	5.5	5.5	4.0	3.5	3.5
28	13.5	13.0	13.5	9.5	8.5	8.5	5.5	5.5	5.5	4.0	3.5	3.5
29	13.5	13.0	13.5	9.0	8.0	8.5	5.5	5.0	5.5	4.0	3.5	3.5
30	14.5	13.5	13.5	9.0	8.5	9.0	5.5	5.0	5.0	3.5	3.5	3.5
31	13.5	13.0	13.0	---	---	---	5.0	4.5	5.0	4.0	3.5	3.5
MONTH	18.0	13.0	15.0	13.0	8.0	10.5	9.0	4.5	7.0	5.0	3.5	4.0

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	3.5	3.5	4.0	4.0	4.0	6.5	6.0	6.5	9.5	9.0	9.0
2	4.0	3.5	3.5	4.0	4.0	4.0	6.5	6.0	6.5	9.5	9.0	9.5
3	3.5	3.5	3.5	4.5	4.0	4.5	6.5	6.0	6.5	10.0	9.5	9.5
4	3.5	3.5	3.5	4.5	4.5	4.5	7.0	6.5	6.5	10.0	9.5	10.0
5	3.5	3.0	3.5	4.5	4.5	4.5	7.0	6.5	6.5	10.0	9.5	10.0
6	3.5	3.0	3.0	4.5	4.5	4.5	7.0	6.5	7.0	10.0	9.5	10.0
7	3.0	2.5	3.0	5.0	4.5	4.5	7.5	7.0	7.5	10.5	10.0	10.0
8	3.0	2.5	3.0	4.5	4.5	4.5	7.5	7.0	7.5	10.5	10.0	10.0
9	3.0	2.5	2.5	5.0	4.5	4.5	7.5	7.0	7.5	10.5	10.0	10.0
10	3.0	2.5	2.5	5.0	4.5	5.0	7.5	7.0	7.0	10.0	9.5	10.0
11	3.0	2.5	3.0	5.5	5.0	5.0	7.5	7.0	7.0	10.5	10.0	10.5
12	3.0	3.0	3.0	5.0	5.0	5.0	7.5	7.0	7.5	11.0	10.5	10.5
13	4.0	3.0	3.0	5.0	4.5	5.0	7.5	7.0	7.5	11.0	10.5	10.5
14	3.0	3.0	3.0	5.5	5.0	5.0	7.5	7.0	7.5	11.0	10.5	11.0
15	3.0	3.0	3.0	5.0	5.0	5.0	7.5	7.0	7.5	11.0	11.0	11.0
16	3.5	3.0	3.0	5.5	5.0	5.0	8.0	7.5	7.5	11.5	11.0	11.0
17	3.5	3.0	3.5	5.0	5.0	5.0	8.0	7.5	7.5	11.5	11.0	11.5
18	3.5	3.5	3.5	5.0	5.0	5.0	8.5	7.5	8.0	11.5	11.0	11.5
19	3.5	3.5	3.5	5.5	5.0	5.0	8.5	8.0	8.0	12.5	11.5	11.5
20	3.5	3.5	3.5	5.5	5.0	5.5	8.5	8.5	8.5	12.0	11.5	12.0
21	4.0	3.5	3.5	5.5	5.5	5.5	9.0	8.5	8.5	12.5	12.0	12.5
22	3.5	3.5	3.5	5.5	5.5	5.5	9.0	8.5	8.5	12.5	12.0	12.5
23	4.0	3.5	3.5	6.0	5.5	6.0	9.0	8.5	8.5	13.0	12.5	12.5
24	4.0	3.5	4.0	6.0	6.0	6.0	9.0	8.5	8.5	13.5	13.0	13.0
25	4.0	4.0	4.0	6.0	5.5	6.0	8.5	8.0	8.5	13.5	13.0	13.0
26	4.0	4.0	4.0	6.0	6.0	6.0	8.5	8.0	8.5	13.5	13.0	13.5
27	4.0	4.0	4.0	6.5	6.0	6.0	9.0	8.5	8.5	13.5	13.0	13.5
28	4.0	4.0	4.0	6.0	6.0	6.0	8.5	8.5	8.5	13.5	13.0	13.5
29	---	---	---	6.5	6.0	6.0	9.0	8.5	8.5	13.5	13.0	13.5
30	---	---	---	6.5	6.0	6.5	9.5	9.0	9.0	13.5	13.5	13.5
31	---	---	---	6.5	6.5	6.5	---	---	---	14.0	13.5	13.5
MONTH	4.0	2.5	3.5	6.5	4.0	5.0	9.5	6.0	7.5	14.0	9.0	11.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	13.5	13.5	16.0	15.5	16.0	18.5	18.0	18.0	19.5	19.0	19.0
2	14.0	13.5	14.0	16.5	15.5	16.0	18.5	18.0	18.5	19.5	19.0	19.0
3	13.5	13.5	13.5	17.0	16.0	16.5	18.5	18.0	18.5	20.0	18.5	19.0
4	14.0	13.5	13.5	17.5	16.0	16.5	18.5	18.5	18.5	19.5	18.5	19.0
5	14.0	13.5	14.0	17.5	16.0	17.0	19.0	18.5	19.0	19.5	18.0	18.5
6	14.5	14.0	14.0	17.5	17.0	17.0	19.0	18.5	18.5	18.5	18.0	18.5
7	14.5	14.5	14.5	17.0	16.5	17.0	19.0	18.5	18.5	18.5	18.0	18.5
8	15.0	14.5	14.5	17.0	16.5	16.5	19.0	18.5	18.5	18.0	17.5	18.0
9	15.0	14.5	14.5	17.0	16.5	16.5	19.5	18.5	19.0	18.0	17.0	17.5
10	15.0	14.5	15.0	17.0	16.0	16.5	19.0	19.0	19.0	18.0	17.0	17.5
11	14.5	14.5	14.5	18.0	16.5	17.0	19.0	18.5	19.0	18.5	17.0	18.0
12	14.5	14.0	14.5	17.5	17.0	17.5	19.0	18.5	18.5	18.0	17.5	18.0
13	14.5	14.5	14.5	17.5	17.0	17.0	19.0	18.5	19.0	19.0	18.0	18.5
14	15.0	14.5	14.5	17.0	16.5	17.0	19.5	18.5	19.0	19.0	18.0	18.5
15	15.0	14.5	15.0	17.0	16.5	16.5	19.5	19.0	19.0	19.0	17.5	18.5
16	15.0	15.0	15.0	17.0	16.5	16.5	19.5	18.5	19.0	18.5	17.5	18.0
17	16.0	15.0	15.5	17.0	16.5	16.5	19.0	19.0	19.0	18.5	16.5	17.5
18	16.0	15.0	15.5	17.0	16.5	16.5	19.0	19.0	19.0	17.5	16.5	17.0
19	15.5	15.0	15.5	17.0	16.5	16.5	19.5	19.0	19.5	17.0	16.5	16.5
20	15.5	14.5	15.0	16.5	16.5	16.5	19.5	19.0	19.0	17.0	16.0	16.5
21	15.5	15.0	15.0	17.0	16.5	17.0	19.0	18.5	19.0	17.0	16.0	16.5
22	15.5	15.0	15.0	17.0	17.0	17.0	19.5	19.0	19.0	17.5	16.5	17.0
23	15.5	15.0	15.0	17.5	17.0	17.5	19.0	19.0	19.0	18.0	16.5	17.0
24	15.5	15.0	15.5	18.0	17.5	17.5	19.5	18.5	19.0	17.5	16.5	17.0
25	16.0	15.5	15.5	18.0	17.5	17.5	19.5	18.0	19.0	18.0	16.5	17.5
26	16.0	15.5	16.0	17.5	17.5	17.5	19.5	18.5	19.0	18.0	17.0	17.5
27	16.0	15.5	16.0	17.5	17.5	17.5	20.0	18.5	19.5	17.5	16.5	17.0
28	16.5	15.5	16.0	18.0	17.5	17.5	20.0	19.0	19.5	17.0	16.0	16.5
29	16.0	15.5	16.0	18.0	17.5	18.0	19.5	19.0	19.0	17.0	16.0	16.5
30	16.0	15.5	16.0	18.0	18.0	18.0	19.5	19.0	19.0	17.0	16.0	16.5
31	---	---	---	18.0	18.0	18.0	19.5	19.0	19.0	---	---	---
MONTH	16.5	13.5	15.0	18.0	15.5	17.0	20.0	18.0	19.0	20.0	16.0	17.5
YEAR	20.0	2.5	11.0									

12472900 COLUMBIA RIVER AT VERNITA BRIDGE, NEAR PRIEST RAPIDS DAM, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°38'34", long 119°43'54", in NW¼SE¼ sec.6, T.13 N., R.25 E., Grant County, Hydrologic Unit 17020016, at State Highway 24 Vernita Bridge crossing, 9.0 mi downstream from Priest Rapids Dam, and at mile 388.1.

DRAINAGE AREA.--96,000 mi^2, approximately.

PERIOD OF RECORD.--Water years 1962-63, 1972, 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1974 to September 1980.

REMARKS.--October 1971 to September 1972, at site 6.4 mi upstream, published as 12472800 "below Priest Rapids Dam." Prior to October 1971 published as 12472800 "at Vernita Ferry."

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)
NOV , 1982												
02...	1000	157000	125	E7.8	13.0	.60	9.4	--	K8	96	57	5
JAN , 1983												
12...	1045	99800	157	8.4	4.5	.80	11.7	92	K2	K18	66	9
MAR												
08...	1045	189000	150	8.4	4.5	1.2	13.2	104	K1	K8	76	10
MAY												
02...	1015	125000	148	8.4	10.0	2.1	12.2	--	K1	36	69	7
JUL												
18...	1000	189000	119	7.6	16.5	1.5	10.4	--	<1	57	58	4
SEP												
20...	1115	66700	137	8.1	17.0	1.1	9.6	99	K1	330	58	3

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)
NOV , 1982											
02...	17	3.5	1.8	6	.1	.70	52	11	.90	<.10	4.3
JAN 1983											
12...	19	4.5	2.4	7	.1	.80	57	13	6.0	.20	5.1
MAR											
08...	22	5.1	2.3	6	.1	.70	66	14	1.2	.10	6.2
MAY											
02...	20	4.7	2.6	7	.1	1.1	63	13	1.8	.10	7.1
JUL											
18...	17	3.7	2.3	8	.1	.80	54	9.3	.90	<.10	4.8
SEP											
20...	17	3.7	2.1	7	.1	.80	55	9.7	1.5	<.10	4.6

DATE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1982											
02...	58	71	.08	24600	2	.12	<.060	.30	.010	.010	.010
JAN , 1983											
12...	84	85	.11	22600	3	.14	.240	.50	.030	.030	<.010
MAR											
08...	77	92	.10	39300	6	.16	.060	.50	.040	.040	.020
MAY											
02...	89	89	.12	30000	<1	.17	.100	.20	.030	.010	.010
JUL											
18...	69	71	.09	35200	5	<.10	.070	.50	.020	.010	<.010
SEP											
20...	72	72	.10	13000	5	<.10	.040	.30	.010	<.010	<.010

E Estimated value based on values reported by the Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12472900 COLUMBIA RIVER AT VERNITA BRIDGE, NEAR PRIEST RAPIDS DAM, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV , 1982											
02...	20	1	28	<.5	<1	<1	<3	1	<3	1	<4
JAN , 1983											
12...	--	--	--	--	--	--	--	--	--	--	--
MAR											
08...	60	1	26	<.5	<1	<1	<3	2	34	2	<4
MAY											
02...	50	1	32	<.5	<1	<1	<3	2	32	1	13
JUL											
18...	30	1	43	.5	<1	<1	<3	2	12	<1	5
SEP											
20...	--	--	--	--	--	--	--	--	--	--	--

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1982											
02...	<1	.1	<10	<1	<1	<1	95	<6	<3	--	--
JAN , 1983											
12...	--	--	--	--	--	--	--	--	--	21	5660
MAR											
08...	3	.1	<10	1	<1	<1	110	<6	8	6	3060
MAY											
02...	5	<.1	<10	2	1	<1	110	<6	12	7	2360
JUL											
18...	3	<.1	<10	<1	1	<1	80	<6	19	6	3060
SEP											
20...	--	--	--	--	--	--	--	--	--	1	180

12473520 COLUMBIA RIVER AT RICHLAND, WA

LOCATION.--Lat 46°18'46", long 119°15'28", in NW¼NW¼ sec.36, T.10 N., R.28 E., Benton County, Hydrologic Unit 17020016, at city of Richland pumping plant, 4.8 mi upstream from Yakima River, and at mile 340.2.

DRAINAGE AREA.--96,900 mi², approximately.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: July 1974 to current year. Water temperatures as recorded for the period July 1974 to January 1977 did not represent mean stream temperatures (see previous state reports for correlation between thermal load measurements and recorded temperatures). Temperature probe, relocated January 1977, reflects mean river-water temperature.

INSTRUMENTATION.--Water-temperature recorder with probe located at city of Richland pumping-plant pier near right bank from July 1974 until January 1977. Since January 1977, recorder probe located 200 ft streamward from plant.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 17-20, 1977; minimum, 0.5°C Feb. 1-4, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 20.5°C Aug. 14-18, 25-30; minimum, 3.0°C Feb. 7-12.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
NOV , 1982												
02...	1415	122	E7.7	13.0	--	9.8	--	--	--	57	2	17
MAR , 1983												
09...	0900	162	E7.7	5.0	1.0	13.6	16	<1	K17	78	13	23
MAY												
03...	0915	155	7.8	9.5	1.8	12.4	<10	K1	K120	70	6	20
JUL												
19...	0945	119	7.4	17.0	1.8	8.2	18	K5	K1200	56	2	16

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	PERCENT SODIUM	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
NOV , 1982												
02...	3.5	2.0	.1	7	.80	55	10	.90	--	4.1	74	71
MAR , 1983												
09...	5.0	2.3	.1	6	.90	65	15	3.4	.10	6.1	87	95
MAY												
03...	4.8	2.8	.2	8	1.0	64	14	1.2	.10	7.3	93	90
JUL												
19...	3.8	2.3	.1	8	.70	54	9.7	1.0	.10	4.7	64	71

DATE	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	ARSENIC TOTAL (UG/L AS AS)
NOV , 1982											
02...	.10	3	.20	<.020	<.060	.50	.70	.020	1.6	3	2
MAR , 1983											
09...	.12	<1	.20	<.020	.110	.60	.80	.080	5.5	7	2
MAY											
03...	.13	12	<.10	<.020	.100	.50	--	.040	3.1	5	1
JUL											
19...	.09	6	<.10	<.020	.010	.50	--	.020	1.9	6	1

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

12473520 COLUMBIA RIVER AT RICHLAND, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
NOV , 1982											
02...	--	<1	10	--	1	70	<1	--	.1	<1	20
MAR , 1983											
09...	2	<1	<10	1	2	200	1	10	.2	1	20
MAY											
03...	1	<1	<10	<1	3	210	7	20	.2	<1	20
JUL											
19...	1	<1	<10	1	6	160	<1	10	.2	<1	30

12473520 COLUMBIA RIVER AT RICHLAND, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.0	16.5	16.5	---	---	---	8.5	8.5	8.5	4.5	4.5	4.5
2	17.0	16.5	17.0	---	---	---	8.5	8.5	8.5	4.5	4.0	4.5
3	17.0	16.5	17.0	---	---	---	9.0	8.5	8.5	4.0	4.0	4.0
4	17.0	16.5	16.5	---	---	---	9.0	9.0	9.0	4.0	4.0	4.0
5	16.5	16.0	16.5	13.0	12.5	12.5	9.0	8.5	8.5	4.5	4.0	4.0
6	16.5	16.0	16.0	12.5	12.0	12.5	9.0	8.5	8.5	4.5	4.0	4.5
7	16.0	15.5	15.5	12.5	12.0	12.0	8.5	8.0	8.0	5.0	4.5	5.0
8	15.5	15.5	15.5	12.0	12.0	12.0	8.0	8.0	8.0	5.5	5.0	5.0
9	16.0	15.5	15.5	12.0	11.5	11.5	8.0	8.0	8.0	5.0	4.5	5.0
10	16.0	15.5	16.0	11.5	11.0	11.5	8.0	7.5	7.5	5.5	5.0	5.5
11	16.0	15.5	15.5	11.5	11.0	11.0	7.5	7.0	7.5	5.0	4.5	5.0
12	15.5	15.0	15.5	11.5	11.0	11.0	7.5	7.0	7.0	5.0	4.5	5.0
13	15.5	15.0	15.5	11.0	11.0	11.0	7.0	7.0	7.0	5.0	4.5	5.0
14	15.5	15.0	15.5	11.0	10.5	10.5	7.0	7.0	7.0	5.0	4.5	4.5
15	15.5	15.0	15.5	10.5	10.5	10.5	7.0	7.0	7.0	5.0	4.5	4.5
16	15.5	15.5	15.5	10.5	10.5	10.5	7.5	7.0	7.0	4.5	4.5	4.5
17	15.5	14.5	15.0	11.0	10.5	11.0	7.5	7.0	7.0	4.5	4.5	4.5
18	14.5	14.0	14.5	11.0	10.5	11.0	7.0	6.5	6.5	4.5	4.0	4.0
19	14.5	13.5	14.0	10.5	10.5	10.5	6.5	6.5	6.5	4.5	4.0	4.5
20	14.0	13.5	14.0	10.5	10.0	10.0	6.5	6.5	6.5	4.5	4.0	4.5
21	14.0	13.5	13.5	10.0	9.5	10.0	6.5	6.5	6.5	4.5	4.0	4.0
22	14.0	14.0	14.0	9.5	9.0	9.0	6.5	6.5	6.5	4.5	4.0	4.0
23	14.5	14.0	14.0	9.0	8.5	9.0	6.5	6.5	6.5	4.5	4.0	4.0
24	14.5	14.0	14.0	9.0	8.5	8.5	6.5	6.0	6.0	4.5	4.0	4.5
25	---	---	---	8.5	8.5	8.5	6.0	6.0	6.0	4.5	4.0	4.5
26	---	---	---	8.5	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5
27	---	---	---	9.5	8.5	8.5	6.0	5.5	5.5	5.0	4.0	4.5
28	---	---	---	8.5	8.5	8.5	5.5	5.5	5.5	4.5	4.0	4.5
29	---	---	---	8.5	8.5	8.5	5.5	5.0	5.0	4.5	4.0	4.0
30	---	---	---	8.5	8.5	8.5	5.0	5.0	5.0	4.5	4.0	4.5
31	---	---	---	---	---	---	5.0	4.5	4.5	4.5	4.0	4.0
MONTH	---	---	---	---	---	---	9.0	4.5	7.0	5.5	4.0	4.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	4.0	4.0	5.0	4.5	4.5	---	---	---	10.0	9.5	10.0
2	4.0	4.0	4.0	5.0	4.5	4.5	---	---	---	10.0	9.5	10.0
3	4.0	3.5	4.0	5.0	4.5	5.0	---	---	---	10.5	9.5	10.0
4	4.0	3.5	3.5	5.0	5.0	5.0	---	---	---	11.0	10.0	10.5
5	3.5	3.5	3.5	5.0	4.5	5.0	---	---	---	10.5	10.0	10.5
6	3.5	3.5	3.5	5.5	4.5	5.0	---	---	---	11.0	10.0	10.5
7	3.5	3.0	3.5	5.5	5.0	5.0	---	---	---	10.5	10.0	10.5
8	3.5	3.0	3.0	5.5	5.0	5.0	---	---	---	10.5	10.0	10.5
9	3.5	3.0	3.0	5.5	5.0	5.0	8.0	7.5	8.0	11.0	10.0	10.5
10	3.5	3.0	3.0	6.0	5.0	5.5	8.0	7.5	7.5	11.0	10.0	10.5
11	3.5	3.0	3.5	5.5	5.0	5.5	8.0	7.0	7.5	11.5	10.0	10.5
12	4.0	3.0	3.5	5.5	5.5	5.5	8.5	7.0	8.0	11.5	10.5	11.0
13	4.0	3.5	3.5	6.0	5.5	5.5	8.5	7.5	8.0	12.0	10.5	11.5
14	3.5	3.5	3.5	6.0	5.5	5.5	8.5	7.5	8.0	11.5	11.0	11.5
15	3.5	3.5	3.5	6.0	5.5	5.5	8.5	7.5	8.0	12.0	11.0	11.5
16	4.0	3.5	4.0	6.0	5.5	5.5	9.0	7.5	8.5	12.0	11.0	11.5
17	4.5	4.0	4.0	6.0	5.5	5.5	9.0	8.0	8.5	12.0	11.5	12.0
18	4.5	4.0	4.0	6.0	5.5	5.5	9.5	8.5	9.0	12.5	11.5	12.0
19	4.0	3.5	4.0	6.0	5.5	6.0	9.5	8.5	9.0	12.5	11.5	12.0
20	4.5	4.0	4.0	6.0	5.5	6.0	10.0	9.0	9.5	13.0	12.0	12.5
21	4.5	4.0	4.5	6.0	5.5	6.0	9.5	9.0	9.5	13.5	12.0	13.0
22	4.5	4.0	4.5	6.5	5.5	6.0	9.5	9.0	9.5	13.5	12.5	13.0
23	4.5	4.0	4.5	---	---	---	9.5	9.0	9.5	14.0	12.5	13.5
24	4.5	4.0	4.5	---	---	---	10.0	9.0	9.5	14.0	13.0	13.5
25	4.5	4.0	4.5	---	---	---	9.5	9.0	9.0	14.5	13.0	14.0
26	5.0	4.5	4.5	---	---	---	9.5	8.5	9.0	14.5	13.0	14.0
27	4.5	4.5	4.5	---	---	---	9.5	8.5	9.0	14.5	13.5	14.0
28	5.0	4.0	4.5	---	---	---	9.5	8.5	9.0	14.5	13.5	14.0
29	---	---	---	---	---	---	9.5	8.5	9.0	15.0	13.5	14.5
30	---	---	---	---	---	---	10.0	9.0	9.5	14.5	14.0	14.5
31	---	---	---	---	---	---	---	---	---	14.5	13.5	14.0
MONTH	5.0	3.0	4.0	---	---	---	---	---	---	15.0	9.5	12.0

12473520 COLUMBIA RIVER AT RICHLAND, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	13.5	14.0	17.0	16.0	16.5	19.5	18.5	19.0	20.0	19.5	19.5
2	15.0	14.0	14.5	17.0	16.0	16.5	19.5	18.5	19.0	19.5	19.0	19.5
3	14.5	13.5	14.0	17.5	16.5	17.0	19.5	19.0	19.5	19.5	19.0	19.5
4	14.5	13.5	14.0	18.0	17.5	17.5	20.0	19.0	19.5	19.5	19.0	19.5
5	15.0	13.5	14.0	18.5	17.5	18.0	20.0	19.5	19.5	19.0	18.5	19.0
6	15.0	14.0	14.5	18.5	18.0	18.0	20.0	19.5	20.0	19.0	18.5	19.0
7	15.5	14.5	15.0	18.0	17.5	17.5	20.0	19.5	19.5	19.0	18.5	18.5
8	15.5	14.5	15.0	17.5	17.0	17.0	19.5	19.0	19.5	18.5	18.0	18.5
9	15.5	15.0	15.0	18.0	17.0	17.5	20.0	19.0	19.5	18.5	17.5	18.0
10	15.5	14.5	15.0	18.0	17.0	17.5	20.0	19.5	20.0	18.0	17.0	17.5
11	15.5	14.5	15.0	18.5	17.5	18.0	20.0	19.0	19.5	18.0	17.0	17.5
12	15.5	14.5	15.0	18.0	17.5	18.0	20.0	19.0	19.5	18.5	18.0	18.0
13	15.5	14.5	15.0	18.0	17.0	17.5	20.0	19.0	19.5	19.0	18.0	18.5
14	15.5	15.0	15.5	17.5	16.5	17.0	20.5	19.5	20.0	19.5	18.5	19.0
15	15.5	15.0	15.5	17.5	17.0	17.0	20.5	20.0	20.5	19.0	18.5	19.0
16	16.0	13.0	15.5	18.0	17.0	17.5	20.5	19.5	20.0	19.0	18.5	18.5
17	16.0	15.5	16.0	18.0	17.0	17.5	20.5	19.5	20.0	18.0	17.5	18.0
18	16.0	15.5	15.5	18.0	17.0	17.5	20.5	19.5	20.0	18.0	16.5	17.0
19	16.0	15.0	15.5	18.0	17.0	17.0	20.0	19.5	20.0	17.0	16.0	16.5
20	16.0	15.0	15.5	17.5	17.0	17.0	20.0	19.5	19.5	17.0	16.0	16.5
21	16.0	15.5	16.0	18.0	16.5	17.0	20.0	19.0	19.5	17.0	16.5	16.5
22	16.0	15.5	15.5	18.0	17.0	17.5	20.0	19.0	19.5	17.5	16.5	17.0
23	16.0	15.5	15.5	18.0	17.0	17.5	19.5	19.0	19.5	17.5	17.0	17.5
24	16.0	15.0	15.5	19.0	18.0	18.5	20.0	19.0	19.5	18.0	17.0	17.5
25	16.5	15.5	16.0	19.0	18.0	18.5	20.5	19.5	20.0	18.0	17.5	17.5
26	17.0	16.0	16.5	18.0	17.5	18.0	20.5	20.0	20.0	18.0	17.5	17.5
27	17.0	16.5	16.5	18.0	17.5	18.0	20.5	20.0	20.5	17.5	17.0	17.5
28	17.5	16.5	17.0	18.5	17.5	18.0	20.5	20.5	20.5	16.5	16.0	16.5
29	17.5	16.5	17.0	19.0	18.0	18.5	20.5	20.0	20.0	16.5	16.0	16.0
30	17.0	16.5	16.5	19.0	18.0	18.5	20.5	19.5	20.0	16.5	16.0	16.0
31	---	---	---	19.0	18.0	18.5	20.0	19.5	20.0	---	---	---
MONTH	17.5	13.5	15.5	19.0	16.0	17.5	20.5	18.5	20.0	20.0	16.0	18.0

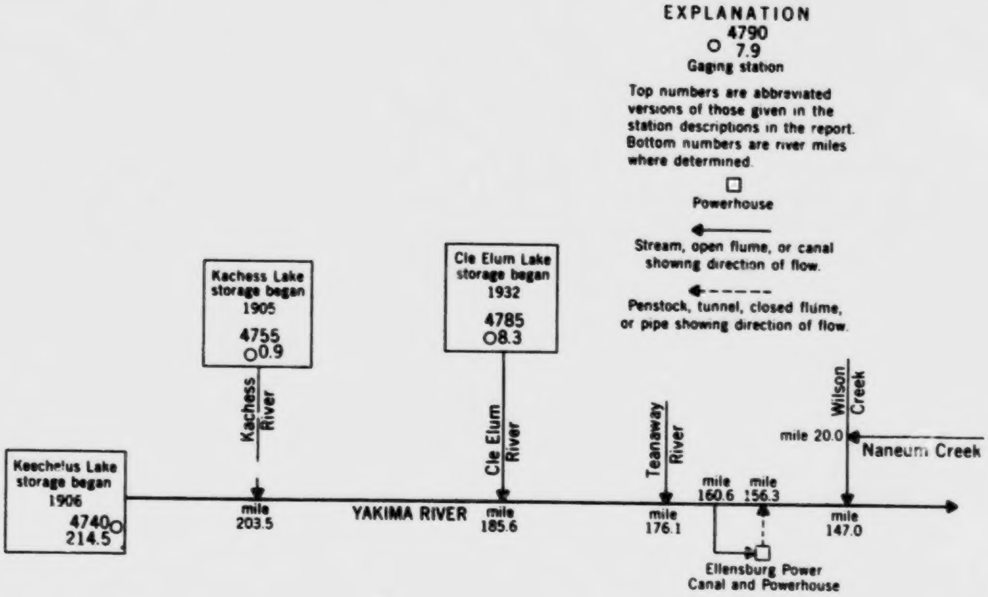
EXPLANATION
4790
7.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Keechelus Lake storage began 1906
4740
214.5
Kachess Lake storage began 1905
4755
0.9
Kachess River
mile 203.5
Cle Elum Lake storage began 1932
4785
8.3
Cle Elum River
mile 185.6
YAKIMA RIVER
Teanaway River
mile 176.1
mile 160.6
mile 156.3
Ellensburg Power Canal and Powerhouse
Wilson Creek
mile 20.0
Naneum Creek
mile 147.0

Figure 27.—Gaging stations in Yakima River basin between Keechelus Lake and Naneum Creek.

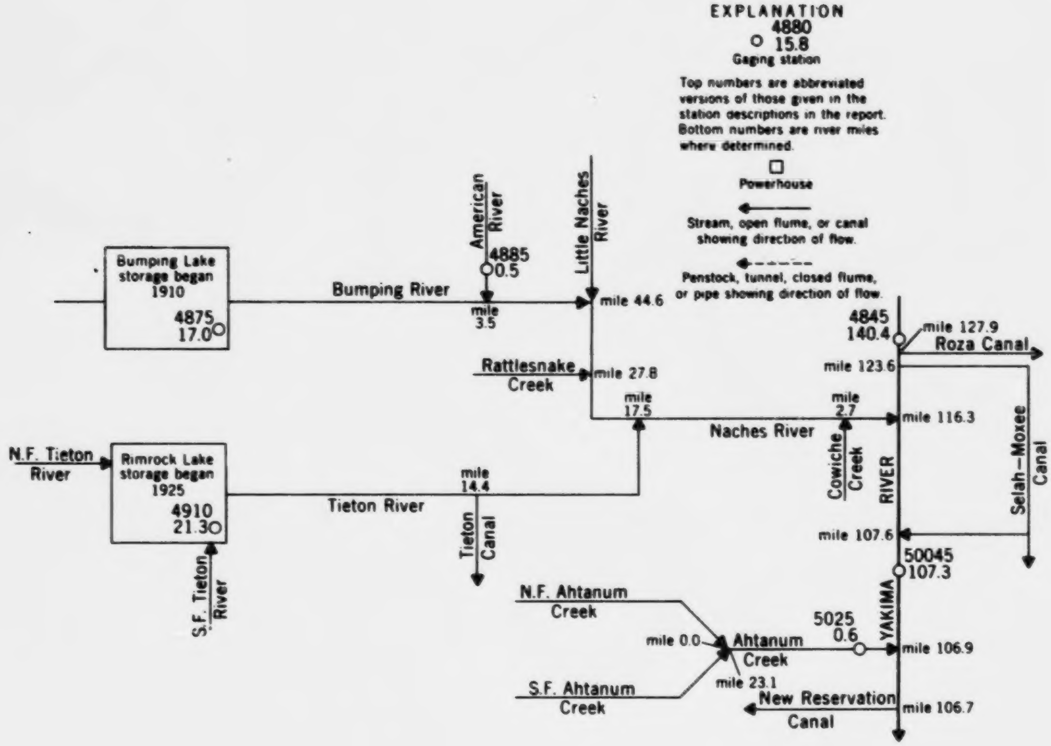
EXPLANATION
4880
15.8
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Bumping Lake storage began 1910
4875
17.0
Bumping River
mile 3.5
American River
4885
0.5
Little Naches River
mile 44.6
Rattlesnake Creek
mile 27.8
mile 17.5
Naches River
mile 2.7
Cowiche Creek
mile 116.3
4845
140.4
mile 127.9
Roza Canal
mile 123.6
Selah–Moxee Canal
N.F. Tieton River
Rimrock Lake storage began 1925
4910
21.3
S.F. Tieton River
mile 14.4
Tieton River
Tieton Canal
YAKIMA RIVER
mile 107.6
50045
107.3
N.F. Ahtanum Creek
S.F. Ahtanum Creek
mile 0.0
Ahtanum Creek
mile 23.1
5025
0.6
mile 106.9
New Reservation Canal
mile 106.7

Figure 28.—Gaging stations in Yakima River basin between Bumping Lake and Ahtanum Creek.

12484500 YAKIMA RIVER AT UMTANUM, WA

LOCATION.--Lat 46°51'46", long 120°28'44", in SW¼NW¼ sec.20, T.16 N., R.19 E., Kittitas County, Hydrologic Unit 17030001, on right bank at Umtanum railway siding, 0.5 mi upstream from Umtanum Creek, 4.2 mi upstream from McPherson Canyon, 10 mi south of Ellensburg, and at mile 140.4.

DRAINAGE AREA.--1,594 mi².

PERIOD OF RECORD.--August 1906 to current year.

REVISED RECORDS.--WSP 412: 1914. WSP 1286: 1910. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,300.00 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 28, 1911, nonrecording gage at approximately same site at various datums. Sept. 28, 1911, to Nov. 23, 1936, water-stage recorder at site about 300 ft upstream at datum 26.70 ft higher.

REMARKS.--Records excellent. Flow partly regulated by Keechelus, Kachess, and Cle Elum Lakes. Diversions above station for irrigation of about 105,000 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,000 ft³/s Nov. 15 or 16, 1906, gage height, 41.1 ft, from floodmarks, present datum; minimum recorded, 138 ft³/s Oct. 3, 1915, gage height, 2.86 ft, datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,210 ft³/s May 31, gage height, 34.52 ft; minimum daily, 728 ft³/s Nov. 24, gage height, 30.54 ft..

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	1060	770	1010	1590	2690	3040	4630	8670	2710	3800	3150
2	1450	1060	784	833	1520	2760	3050	4830	7540	2890	3860	3030
3	1450	1020	839	876	1440	2600	2690	4600	6850	2770	4330	2680
4	1440	923	2000	860	1370	2580	2460	4480	5600	2680	4260	2640
5	1400	873	2090	1010	1300	2580	2330	5080	5150	2660	4350	2950
6	1390	922	1670	2060	1300	2610	2260	5200	4860	2760	4280	2920
7	1380	961	1380	2070	1280	2810	2330	5130	3260	2740	4270	2900
8	1390	914	1180	3740	1240	3070	2460	4990	3010	2710	4330	2860
9	1440	871	1100	4590	1260	4660	2460	4730	2930	2870	4290	2790
10	1450	833	1020	5090	1230	6690	2390	4410	3340	2830	4260	2900
11	1440	807	971	5850	1280	5930	2260	4230	4230	2960	4290	3010
12	1450	818	932	4210	1430	5520	2370	3620	4480	3120	4210	2910
13	1460	821	914	3410	1470	5520	2270	3540	4420	3330	4130	1770
14	1420	795	937	2980	1380	5200	2280	3350	3660	3400	4270	1520
15	1190	770	928	2580	1390	4370	2310	3320	2820	3230	4230	1500
16	1090	788	1190	2330	1540	3870	2630	3220	2700	3110	4020	1440
17	1080	825	1340	2130	1840	3720	2810	3180	2420	3110	4070	1430
18	1070	933	1180	1970	2320	3270	3120	3260	2340	3420	4260	1540
19	1070	967	1090	1990	2260	3030	3550	3330	2340	3380	4210	1690
20	1060	903	1070	2020	2080	2850	4100	3480	2290	3500	4300	1670
21	986	872	1030	1820	2020	2730	4590	3990	2200	3500	4220	1660
22	903	822	986	1690	2200	2670	4860	4270	2410	3420	4180	1630
23	893	761	935	1620	2400	2750	4690	4240	2530	3600	4100	1600
24	957	728	881	1610	3150	2700	5160	4290	2550	3720	4090	1420
25	955	745	921	1620	3430	2600	5040	4670	2530	3770	4140	1280
26	914	750	921	1880	3510	2460	4450	4690	2680	3780	3940	1300
27	888	755	865	2540	3170	2430	4360	4980	2710	3860	4040	1250
28	889	755	835	2170	2900	2310	4170	6540	2610	3860	4110	1230
29	1230	776	846	1940	---	2440	4110	7080	2690	3830	4280	1210
30	1150	778	870	1790	---	3450	4380	8570	2660	3890	4100	1200
31	1070	---	1010	1680	---	3330	---	9010	---	3850	3580	---
TOTAL	37455	25606	33485	71969	53300	106200	98980	144940	108480	101260	128800	61080
MEAN	1208	854	1080	2322	1904	3426	3299	4675	3616	3266	4155	2036
MAX	1500	1060	2090	5850	3510	6690	5160	9010	8670	3890	4350	3150
MIN	888	728	770	833	1230	2310	2260	3180	2200	2660	3580	1200
AC-FT	74290	50790	66420	142800	105700	210600	196300	287500	215200	200800	255500	121200

CAL YR 1982	TOTAL	966302	MEAN	2647	MAX	8940	MIN	600	AC-FT	1917000
WTR YR 1983	TOTAL	971555	MEAN	2662	MAX	9010	MIN	728	AC-FT	1927000

12488500 AMERICAN RIVER NEAR NILE, WA

LOCATION.--Lat 46°58'40", long 121°10'03", in SE¼NW¼ sec.12, T.17 N., R.13 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, on right bank 300 ft upstream from Bumping Lake Road bridge, 4.9 mi downstream from Hell Creek, 16.0 mi northwest of Nile, and at mile 0.5.

DRAINAGE AREA.--78.9 mi^2.

PERIOD OF RECORD.--April 1909 to March 1912, July to September 1913, June to September 1914, June to September 1915, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 982: 1940-42. WSP 1216: Drainage area. WSP 1286: 1911.

GAGE.--Water-stage recorder. Datum of gage is 2,700 ft Washington State Highway Department datum. Prior to Sept. 12, 1915, nonrecording gage at site 300 ft downstream at different datum. Oct. 12 to Dec. 7, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except those for period of no gage-height record June 12 to July 11, which are fair. No regulation or diversion.

AVERAGE DISCHARGE.--46 years (water years, 1910-11, 1940-83), 244 ft^3/s, 42.00 in/yr, 176,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,230 ft^3/s Dec. 26, 1980, gage height, 77.99 ft; minimum, 20 ft^3/s Nov. 22, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,140 ft^3/s May 31, gage height, 76.08 ft; minimum, 50 ft^3/s Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	111	78	80	110	210	211	474	1500	560	238	106
2	53	104	76	140	107	201	204	539	1320	580	222	102
3	53	100	195	200	104	195	191	548	1180	520	201	91
4	52	104	589	300	101	193	182	575	1020	460	186	86
5	52	122	422	310	98	192	177	667	919	450	175	80
6	53	120	322	292	97	192	180	667	907	500	166	77
7	62	110	256	299	97	198	182	652	975	470	160	74
8	61	104	222	411	95	215	182	594	1120	440	154	73
9	62	98	201	381	93	331	182	525	1140	420	152	73
10	61	92	160	325	93	525	177	478	1010	410	150	76
11	60	89	140	296	93	548	171	462	932	411	152	88
12	58	85	140	264	97	504	162	450	779	487	148	86
13	57	84	150	225	104	474	160	450	740	603	134	78
14	56	79	150	223	102	442	158	470	690	642	126	76
15	55	77	141	208	101	403	160	478	720	454	123	72
16	53	80	177	195	100	363	173	474	790	370	119	70
17	57	100	186	184	108	332	209	478	880	339	114	68
18	57	134	160	174	133	302	256	508	900	332	109	70
19	55	118	151	166	128	280	325	548	850	349	106	77
20	55	111	143	156	127	264	399	647	750	360	101	73
21	57	103	139	148	127	250	462	913	710	332	99	70
22	140	96	131	143	130	244	482	1100	690	322	94	70
23	218	80	123	138	174	238	487	1220	760	339	96	69
24	168	78	115	133	231	225	487	1340	730	342	91	68
25	138	80	112	128	244	219	470	1370	680	305	90	65
26	152	85	100	128	239	211	438	1490	700	283	87	64
27	135	84	85	130	228	204	415	1420	650	262	87	63
28	127	84	83	125	217	196	399	1490	600	247	86	62
29	135	84	80	120	---	201	392	1760	550	236	87	60
30	128	82	78	115	---	214	414	1930	510	222	98	60
31	117	---	75	111	---	216	---	1860	---	227	93	---
TOTAL	2640	2878	5180	6248	3678	8782	8487	26577	25702	12274	4044	2247
MEAN	85.2	95.9	167	202	131	283	283	857	857	396	130	74.9
MAX	218	134	589	411	244	548	487	1930	1500	642	238	106
MIN	52	77	75	80	93	192	158	450	510	222	86	60
CFSM	1.08	1.22	2.12	2.56	1.66	3.59	3.59	10.9	10.9	5.02	1.65	.95
IN.	1.24	1.36	2.44	2.95	1.73	4.14	4.00	12.53	12.12	5.79	1.91	1.06
AC-FT	5240	5710	10270	12390	7300	17420	16830	52720	50980	24350	8020	4460

CAL YR 1982 TOTAL 100557 MEAN 275 MAX 1350 MIN 52 CFSM 3.49 IN. 47.41 AC-FT 199500
WTR YR 1983 TOTAL 108737 MEAN 298 MAX 1930 MIN 52 CFSM 3.78 IN. 51.27 AC-FT 215700

12474000 KEECHELUS LAKE.--Lat 47°19'21", long 121°20'18", in SE¼NE¼ sec.12, T.21 N., R.11 E., Kittitas County, Hydrologic Unit 17030001, Wenatchee National Forest, at headgate tower of outlet at dam on Yakima River, 3.0 mi northwest of Martin, 10 mi northwest of Easton, and at mile 214.5. DRAINAGE AREA.--54.7 mi². PERIOD OF RECORD.--January 1906 to current year. GAGE.--water-stage recorder and low-water staff gages. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 24, 1967, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1917; storage began behind crib dam Jan. 12, 1906, behind present dam Aug. 19, 1914. Initial filling of present reservoir June 15, 1920. Usable capacity, 157,800 acre-ft beteween elevations 2,425.00 ft, invert of gate sill, and 2,517.00 ft, spillway crest. Spillway raised 2 ft Sept. 12, 1952. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 160,940 acre-ft June 5, 1969, elevation, 2,518.23 ft; minimum observed, 448 acre-ft Sept. 6, 12, 13, 1906 (original crib dam); minimum elevation observed, 2,428.30 ft Sept. 20, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 157,510 acre-ft June 10, 11, elevation, 2,516.90 ft; minimum, 42,160 acre-ft Oct. 15, elevation, 2,457.27 ft.

12475500 KACHESS LAKE.--Lat 47°15'53", long 121°12'16", in SW¼SW¼ sec.34, T.21 N., R.13 E., Kittitas County, Hydrologic Unit 17030001, Wenatchee National Forest, on outlet gate tower at dam on Kachess River, 2.4 mi northwest of Easton. DRAINAGE AREA.--63.6 mi². PERIOD OF RECORD.--September 1905 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Oct. 28, 1966, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1912. Original crib dam capacity, 21,000 acre-ft, used Sept. 20, 1905, to June 30, 1911. Storage behind present dam began June 30, 1911. Usable capacity, 239,000 acre-ft between elevations 2,192.75 ft, invert of gate sill, and 2,262.00 ft, top of spillway gate. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 244,800 acre-ft May 9, 1957, elevation, 2,263.29 ft; minimum observed, 525 acre-ft Sept. 14, 15, 1910 (original crib dam); minimum elevation observed, 2,197.73 ft Sept. 25, 27, 1915.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 238,620 acre-ft June 2, elevation, 2,261.92 ft; minimum, 135,210 acre-ft Sept. 30, elevation, 2,237.25 ft.

12478500 CLE ELUM LAKE.--Lat 47°14'44", long 121°04'24", in NE¼NE¼ sec.10, T.20 N., R.14 E., Kittitas County, Hydrologic Unit 17030001, at dam on Cle Elum River at outlet of Cle Elum Lake, 4.0 mi northwest of Roslyn, and at mile 8.3. DRAINAGE AREA.--203 mi². PERIOD OF RECORD.--May 1906 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 6, 1968, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1933; storage began behind present dam Feb. 26, 1932. Usable capacity, 436,900 acre-ft between elevations 2,110.00 ft, invert of gate sill, and 2,240.00 ft, top of spillway gate. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 448,520 acre-ft May 8, 9, 1957, elevation, 2,241.98 ft; minimum observed, 2,380 acre-ft Aug. 31, 1906; minimum elevation observed, 2,114.35 ft Oct. 14, 1932. Storage was uncontrolled Oct. 3, 1931, to Feb. 26, 1932.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 436,090 acre-ft May 30, elevation, 2,239.82 ft; minimum, 147,590 acre-ft Sept. 30, elevation, 2,168.48 ft.

12487500 BUMPING LAKE.--Lat 46°52'25", long 121°17'57", in SW¼ sec.14 (unsurveyed), T.16 N., R.12 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, at outlet of dam on Bumping River, 2.2 mi southwest of Goose Prairie, 10 mi southwest of town of American River, 19 mi west of Nile, and at mile 17.0. DRAINAGE AREA.--69.3 mi². PERIOD OF RECORD.--June to July 1906, April 1909 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Nov. 23, 1966, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1910; storage began Nov. 3, 1910. Usable capacity, 33,700 acre-ft between elevations 3,389.00 ft, invert of gate sill, and 3,426.00 ft, spillway crest. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 39,840 acre-ft June 21, 22, 1925, elevation, 3,430.55 ft; minimum observed, 1,130 acre-ft Feb. 5-9, 1949, elevation, 3,390.80 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 34,180 acre-ft June 2, elevation, 3,426.36 ft; minimum, 5,260 acre-ft Nov. 15, 16, elevation, 3,397.08 ft.

12491000 RIMROCK LAKE.--Lat 46°39'23", long 121°07'43", in NE¼SW¼ sec.31, T.14 N., R.14 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, on upstream spillway pier at Tieton dam on Tieton River at Rimrock, 0.6 mi upstream from Wildcat Creek, 7.1 mi upstream from headworks on Tieton Canal, 21 mi west of Naches, and at mile 21.3. DRAINAGE AREA.--187 mi². PERIOD OF RECORD.--April 1925 to current year. Prior to October 1959, published as Tieton Reservoir. GAGE.--water-stage recorder and low-water staff gages. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 14, 1967, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed in 1925; storage began Apr. 27, 1925. Usable capacity, 198,000 acre-ft between elevations 2,766.00 ft, invert of tunnel entrance, and 2,926.00 ft, crest of spillway gates. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 201,630 acre-ft June 18, 1974, elevation, 2,927.43 ft; minimum observed, 30 acre-ft Oct. 19, 20, 1979, elevation, 2,766.25 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 198,500 acre-ft June 28, July 14, elevation, 2,926.20 ft; minimum, 122,810 acre-ft Oct. 7, elevation, 2,891.96 ft.

RESERVOIRS IN YAKIMA RIVER BASIN, WA--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	12474000 KEECHELUS LAKE			12475500 KACHESS LAKE		
Sept. 30	2,466.00	54,660	—	2,239.22	142,740	--
Oct. 31	2,459.98	45,960	-8,700	2,239.72	144,700	+1,960
Nov. 30	2,463.01	50,280	+4,320	2,241.91	153,220	+8,520
Dec. 31	2,472.51	64,720	+14,440	2,246.12	170,180	+16,960
CAL YR 1982	---	---	+3,760	---	---	+40,990
Jan. 31	2,485.45	87,280	+22,560	2,253.15	199,830	+29,650
Feb. 28	2,491.09	98,270	+10,990	2,254.86	207,240	+7,410
Mar. 31	2,502.35	122,340	+24,070	2,258.51	223,310	+16,070
Apr. 30	2,509.71	139,590	+17,250	2,259.35	227,050	+3,740
May 31	2,516.58	156,700	+17,110	2,261.91	238,570	+11,520
June 30	2,511.85	144,820	-11,880	2,260.01	230,000	-8,570
July 31	2,499.73	116,500	-28,320	2,257.54	219,010	-10,990
Aug. 31	2,480.97	79,060	-37,440	2,248.65	181,520	-37,490
Sept. 30	2,474.43	67,850	-11,210	2,237.25	135,210	-46,310
WTR YR 1983	---	---	+13,190	---	---	-7,530
	12478500 CLE ELUM LAKE			12487500 BUMPING LAKE		
Sept. 30	2,174.08	166,390	--	3,408.21	13,950	--
Oct. 31	2,177.21	177,200	+10,810	3,397.95	5,860	-8,090
Nov. 30	2,181.01	190,600	+13,400	3,397.24	5,360	-500
Dec. 31	2,190.91	226,960	+36,360	3,398.45	6,200	+840
CAL YR 1982	---	---	+184,460	---	---	+1,750
Jan. 31	2,205.58	284,660	+57,700	3,398.39	6,160	-40
Feb. 28	2,211.63	309,610	+24,950	3,399.28	6,790	+630
Mar. 31	2,224.34	364,430	+54,820	3,399.59	7,010	+220
Apr. 30	2,230.70	393,180	+28,750	3,401.94	8,760	+1,750
May 31	2,239.77	435,850	+42,670	3,425.91	33,590	+24,830
June 30	2,238.52	429,850	-6,000	3,426.08	33,810	+220
July 31	2,219.51	343,190	-86,660	3,423.63	30,680	-3,130
Aug. 31	2,175.99	172,960	-170,230	3,420.21	26,520	-4,160
Sept. 30	2,168.48	147,590	-25,370	3,401.39	8,340	-18,180
WTR YR 1983	---	---	-18,800	---	---	-5,610
	12491000 RIMROCK LAKE					
Sept. 30	2,892.50	123,860	--			
Oct. 31	2,896.82	132,420	+8,560			
Nov. 30	2,898.23	135,270	+2,850			
Dec. 31	2,901.02	141,000	+5,730			
CAL YR 1982	--	--	+46,350			
Jan. 31	2,899.47	137,800	-3,200			
Feb. 28	2,898.12	135,040	-2,760			
Mar. 31	2,903.08	145,310	+10,270			
Apr. 30	2,904.48	148,270	+2,960			
May 31	2,924.79	194,960	+46,690			
June 30	2,926.09	198,230	+3,270			
July 31	2,925.70	197,240	-990			
Aug. 31	2,922.60	189,540	-7,700			
Sept. 30	2,902.71	144,530	-45,010			
WTR YR 1983	---	---	+20,670			

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°32'04", long 120°27'58", in NW¼NE¼ sec.17, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on left bank 2,200 ft upstream from Ahtanum Creek, 0.8 mi upstream from Wapato Dam, 1.4 mi southeast of Union Gap, and at about mile 107.3.

DRAINAGE AREA.--3,479 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1967, at site 1,200 ft downstream at same datum.

REMARKS.--Water-discharge records good. Diversions above station for irrigation of about 212,000 acres. Flow partly regulated by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes. Records at this site plus those for Ahtanum Creek at Union Gap (station 12502500) are equivalent to discontinued station 12503000, Yakima River at Union Gap.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,300 ft³/s Dec. 3, 1977, elevation, 949.55 ft; minimum daily, 300 ft³/s Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,400 ft³/s May 31, elevation, 945.25 ft; minimum, 1,180 ft³/s Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1840	1880	1750	1820	3390	5350	5680	7330	14800	3990	3270	3120
2	1640	1870	1510	1840	2970	5410	5600	7920	13100	4180	3150	3020
3	1740	1820	1560	1830	2840	5230	5020	7790	11900	4050	3480	2690
4	1800	1740	3440	1870	2720	5270	4590	7490	10300	3810	3430	2490
5	1780	1670	4200	2220	2610	5300	4260	8390	9170	3690	3440	2710
6	1760	1730	3530	3920	2570	5350	4120	9100	8740	3660	3360	2730
7	1760	1760	2990	4330	2570	6060	4190	8810	7550	3580	3340	2660
8	1650	1700	2560	7170	2480	6220	4360	8420	7000	3420	3430	2590
9	1630	1640	2400	8200	2500	8600	4440	7810	7070	3470	3390	2540
10	1640	1650	2210	8170	2460	13600	4280	7000	6960	3400	3340	2580
11	1600	1670	2040	9280	2570	13600	4030	6570	7490	3390	3400	2770
12	1560	1650	2010	7290	2760	11700	4030	5840	7690	3510	3400	2750
13	1590	1640	2020	6200	2910	11900	3870	5400	7290	3760	3260	2970
14	1480	1600	2040	5410	2780	11700	3670	5340	6370	4200	3330	2610
15	1500	1540	2010	4830	2720	9740	3730	5280	5260	3850	3360	2610
16	1430	1550	2230	4440	2900	8560	4040	5040	4390	3580	3170	2490
17	1370	1630	2670	4160	3200	7760	4400	4790	4030	3330	3130	2470
18	1390	1840	2430	4230	4300	7110	5010	5070	3900	3680	3340	2600
19	1310	1930	2250	4250	4290	6600	5720	5190	3780	3460	3330	3050
20	1430	1820	2200	4220	3930	6180	6760	5480	3570	3580	3380	2740
21	1760	1750	2150	3890	3850	5710	7770	6660	3290	3570	3380	2860
22	1740	1680	2070	3690	4100	5320	8380	7780	3270	3430	3320	2810
23	1920	1560	2110	3560	4670	5320	8150	8190	3420	3470	3320	2440
24	1930	1490	2040	3620	5900	5200	8540	8650	3480	3800	3320	2610
25	1820	1500	2020	3620	6600	4960	8650	9470	3420	3830	3440	2300
26	1820	1530	2040	4160	6910	4740	7810	9820	3560	3600	3230	2530
27	1800	1500	1880	5140	6200	4660	7290	10100	3830	3650	3260	2430
28	1780	1500	1760	4480	5720	4440	6850	11400	3470	3620	3400	2310
29	2140	1550	1770	4050	---	4460	6570	12200	3630	3410	3710	2200
30	2110	1510	1710	3790	---	5900	6810	14100	3920	3410	3930	1730
31	1970	---	1750	3590	---	6150	---	15100	---	3360	3560	---
TOTAL	52690	49900	69350	139270	103420	218100	168620	247530	185650	112740	104600	78410
MEAN	1700	1663	2237	4493	3694	7035	5621	7985	6188	3637	3374	2614
MAX	2140	1930	4200	9280	6910	13600	8650	15100	14800	4200	3930	3120
MIN	1310	1490	1510	1820	2460	4440	3670	4790	3270	3330	3130	1730
AC-FT	104500	98980	137600	276200	205100	432600	334500	491000	368200	223600	207500	155500

CAL YR 1982 TOTAL 1451090 MEAN 3976 MAX 19900 MIN 850 AC-FT 2878000
WTR YR 1983 TOTAL 1530280 MEAN 4193 MAX 15100 MIN 1310 AC-FT 3035000

BEST COPY AVAILABLE

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at the cableway 0.2 miles downstream from gage and 0.7 miles downstream from Moxee Drain.

PERIOD OF RECORD.--Water years 1969, 1971, March 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: March 1981 to December 1981.

REMARKS.--Water-quality records affected by Moxee Drain during the summer months when it accounts for about three percent of the flow of the Yakima River at the entry point of Moxee Creek, about 0.7 miles above the sampling point. Moxee Drain contributes significant suspended sediment load and nutrients to the river, during the irrigation season.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)
NOV , 1982												
01...	1400	1920	167	8.6	8.5	2.4	13.6	119	47	420	64	0
JAN , 1983												
11...	1600	8800	108	8.6	3.5	35	12.6	98	K210	2200	43	0
MAR												
14...	1615	11200	142	7.8	6.5	34	11.5	97	93	1300	49	0
MAY												
18...	1525	5060	106	8.4	13.0	2.1	11.9	116	65	150	43	0
JUL												
21...	1625	3620	112	8.3	18.0	3.5	11.0	119	160	140	41	0
SEP												
13...	1430	2900	113	8.3	18.0	5.4	11.0	120	150	--	42	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV , 1982											
01...	16	5.9	8.9	23	.5	1.7	73	8.0	4.1	<.10	19
JAN , 1983											
11...	11	3.7	4.9	19	.3	1.4	47	10	2.8	<.10	17
MAR											
14...	12	4.6	5.6	19	.4	1.7	54	9.5	3.3	<.10	23
MAY											
18...	11	3.7	4.8	19	.3	1.1	47	5.4	2.2	<.10	17
JUL											
21...	9.8	3.9	5.1	21	.4	1.2	47	5.0	2.5	.20	13
SEP											
13...	11	3.6	5.8	22	.4	1.3	45	5.8	4.3	<.10	15

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV , 1982											
01...	107	110	.15	555	.29	.160	.90	.110	.100	.090	60
JAN , 1983											
11...	77	79	.10	1830	.28	.140	1.0	.200	.050	.030	--
MAR											
14...	86	93	.12	2600	.26	.220	.80	.180	.080	.060	80
MAY											
18...	75	74	.10	1020	<.10	<.060	.50	.060	.030	.030	30
JUL											
21...	59	69	.08	577	.17	.140	.50	.080	.050	.030	30
SEP											
13...	72	74	.10	564	.18	.140	.50	.070	.050	.040	--

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

AVAILABLE

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)
NOV , 1982											
01...	1	15	<.5	<1	<1	<3	3	56	2	5	8
JAN , 1983											
11...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	<1	16	<.5	<1	<1	<3	3	83	<1	5	10
MAY											
18...	1	11	<.5	<1	<1	<3	2	29	2	10	8
JUL											
21...	2	18	<.5	<1	<1	<3	3	41	3	6	6
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDIMENT, SUS-PENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982											
01...	.1	<10	2	<1	<1	71	<6	8	24	124	--
JAN , 1983											
11...	--	--	--	--	--	--	--	--	177	4210	60
MAR											
14...	<.1	<10	<1	<1	<1	59	<6	21	199	6020	72
MAY											
18...	<.1	<10	<1	<1	<1	49	<6	11	12	164	--
JUL											
21...	<.1	<10	<1	<1	<1	46	<6	7	45	440	--
SEP											
13...	--	--	--	--	--	--	--	--	29	227	79

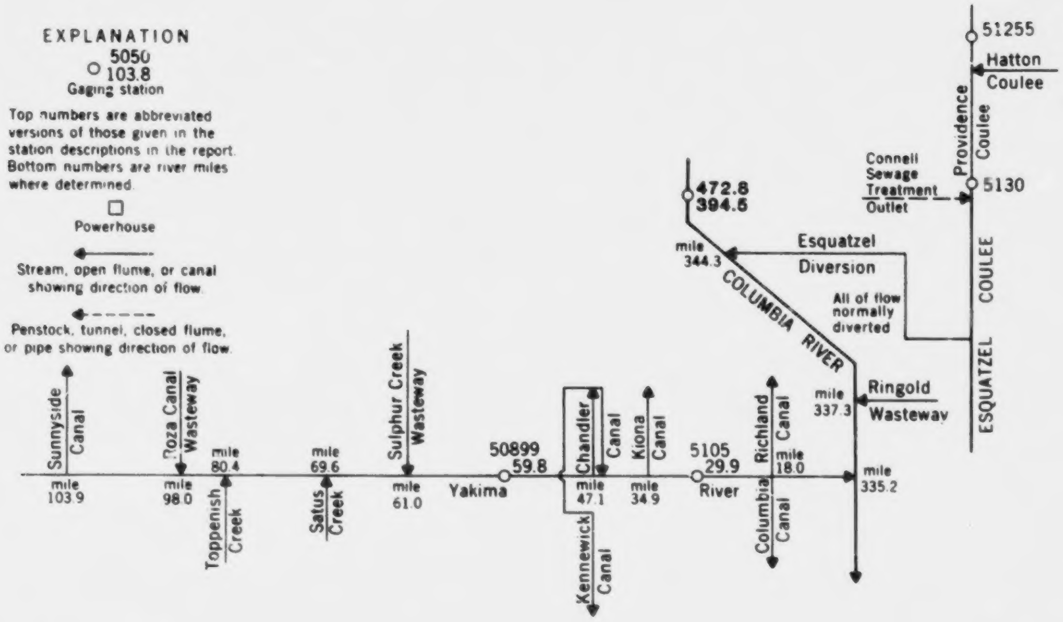
EXPLANATION
5050
103.8
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
51255
Hatton Coulee
Providence Coulee
Connell Sewage Treatment Outlet
5130
472.8
394.5
mile 344.3
Esquatzel Diversion
COLUMBIA RIVER
All of flow normally diverted
ESQUATZEL COULEE
Ringold Wasteway
mile 337.3
mile 335.2
Sunnyside Canal
mile 103.9
Roza Canal Wasteway
mile 98.0
mile 80.4
Toppenish Creek
mile 69.6
Satus Creek
Sulphur Creek Wasteway
mile 61.0
Yakima
50899
59.8
Chandler Canal
mile 47.1
Kennewick Canal
Kiona Canal
mile 34.9
5105
29.9
River
Richland Canal
mile 18.0
Columbia Canal

Figure 29.—Gaging stations in Yakima River basin downstream from Sunnyside Canal and in Esquatzel Coulee.

12502500 AHTANUM CREEK AT UNION GAP, WA

LOCATION.--Lat 46°32'08", long 120°28'20", in SE¼SW¼ sec.8, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on left upstream wingwall of Union Pacific Railway bridge at Union Gap, 1.0 mi south of town of Union Gap, and at mile 0.6.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--May to November 1904, August 1907 to July 1908, March to October 1910, April 1911 to September 1914, May 1951 to April 1953, August 1960 to current year. Published as "near Yakima" 1904, 1907-08, 1910-12. Records for water years 1913-14 are published in WSP 1286.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft, from topographic map. Prior to Sept. 30, 1914, nonrecording gage at approximately same site at various datums. May 12, 1951 to Sept. 30, 1972, water-stage recorder at present site at datum 3.00 ft higher.

REMARKS.-Records good. Diversions and ground-water withdrawals for irrigation of about 9,000 acres above station. Return from transbasin irrigation flows contribute to base flow. During high flow, flood waters from Wide Hollow Creek may enter Ahtanum Creek above the gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft³/s Jan. 16, 1974, gage height, 10.36 ft; no flow many days during September and October 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,240 ft³/s Mar. 13, gage height, 7.32 ft; minimum, 7.3 ft³/s Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	41	47	54	137	235	262	262	633	134	16	30
2	37	40	47	59	128	240	262	282	554	143	12	33
3	33	38	46	53	121	224	237	285	510	125	12	32
4	31	37	91	61	113	224	222	285	464	115	10	32
5	29	40	94	65	108	222	212	336	425	105	9.8	28
6	30	43	86	193	105	227	205	370	399	97	11	22
7	30	42	66	209	101	245	205	346	381	92	12	22
8	29	42	43	604	99	248	207	329	381	88	14	24
9	30	42	47	310	99	310	205	310	377	88	14	22
10	31	41	43	297	97	604	200	273	356	79	12	21
11	30	40	37	279	113	609	188	262	329	73	12	24
12	30	40	43	237	134	514	180	248	294	71	12	24
13	29	40	49	207	161	728	167	253	253	73	12	20
14	28	40	54	186	147	682	159	267	235	74	12	22
15	29	36	59	173	141	506	155	259	232	72	12	21
16	29	37	94	163	153	399	155	245	224	67	11	23
17	28	42	132	155	165	406	163	245	217	63	9.4	26
18	30	55	101	147	240	360	180	248	217	61	8.7	30
19	28	51	94	147	248	323	205	270	202	53	8.7	43
20	30	46	94	139	212	294	245	303	188	54	9.4	45
21	32	43	91	127	205	273	282	353	169	48	11	43
22	37	39	87	120	214	259	303	399	159	40	11	41
23	44	33	79	115	237	248	307	429	155	37	12	39
24	42	29	67	132	273	237	333	452	147	37	18	38
25	40	30	72	139	288	227	319	464	137	37	18	37
26	39	35	70	214	303	217	291	506	136	35	19	32
27	39	39	53	310	270	212	273	519	151	33	19	29
28	40	42	46	202	251	200	259	523	132	33	21	31
29	52	44	39	173	---	205	253	558	128	30	28	35
30	44	43	46	161	---	273	248	618	136	24	33	33
31	42	---	50	149	---	267	---	678	---	19	30	---
TOTAL	1067	1210	2067	5582	4863	10218	6882	11177	8321	2100	450.0	902
MEAN	34.4	40.3	66.7	180	174	330	229	361	277	67.7	14.5	30.1
MAX	52	55	132	604	303	728	333	678	633	143	33	45
MIN	28	29	37	53	97	200	155	245	128	19	8.7	20
AC-FT	2120	2400	4100	11070	9650	20270	13650	22170	16500	4170	893	1790

CAL YR 1982 TOTAL 43479 MEAN 119 MAX 966 MIN 12 AC-FT 86240
WTR YR 1983 TOTAL 54839.0 MEAN 150 MAX 728 MIN 8.7 AC-FT 108800

12508990 YAKIMA RIVER AT MABTON, WA

LOCATION.--Lat 46°13'53", long 119°59'54", in SW¼SW¼ sec.30, T.9 N., R.23 E., Yakima County, Hydrologic Unit 17030003, on right bank under county highway bridge, at east boundary of Yakima Indian Reservation, 1.1 mi north of Mabton, and at mile 59.8.

DRAINAGE AREA.--5,359 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 643 ft, from topographic map. Prior to Oct. 1, 1976, at datum 10 ft higher.

REMARKS.--Water-discharge records good. Flow affected by storage in five reservoirs and by diversions above station for irrigation above and below station of about 424,000 acres and by return flow from irrigated area.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,200 ft³/s Jan. 17, 1974, gage height, 25.30 ft present datum; minimum daily, 320 ft³/s Mar. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,200 ft³/s Mar. 14, gage height, 18.71 ft; minimum daily, 1,570 ft³/s Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2060	2480	2180	2590	5170	8130	8040	6890	14000	2570	1890	2480
2	1870	2420	2400	2620	4780	7920	8060	7430	13900	2760	1720	2210
3	1700	2410	2220	2640	4380	7750	7750	7470	12200	2960	1570	2150
4	1680	2360	2490	2660	4170	7580	7090	7220	10500	2830	1780	1920
5	1670	2260	4430	3590	3960	7490	6550	7160	8740	2700	1780	1790
6	1670	2250	4500	5950	3810	7510	6180	8490	7880	2490	1770	1670
7	1670	2300	4170	7160	3780	7640	5910	8740	7200	2340	1750	1830
8	1770	2330	3700	7620	3700	8400	5850	8530	5810	2160	1790	1740
9	1770	2250	3380	9900	3650	9000	5890	8230	5520	2120	1850	1670
10	1680	2200	3190	9600	3650	12000	5830	7510	5460	2150	1770	1640
11	1690	2240	2930	10400	3690	15300	5480	6850	5610	2070	1690	1700
12	1660	2210	2800	10400	4290	16600	5260	6340	6140	1910	1780	1830
13	1650	2200	2790	8940	4920	15800	5110	5540	6100	1950	1840	1880
14	1660	2200	2760	7980	4590	16800	4850	5170	5570	2180	1790	1970
15	1850	2160	2790	7160	4380	16200	4650	5090	4590	2490	1820	1750
16	1940	2110	3420	6400	4500	13800	4670	5040	3650	2280	1790	1740
17	1820	2170	4380	5970	4980	12000	4980	4590	2930	2130	1640	1680
18	1760	2290	3960	5730	7770	10600	5320	4330	2560	2010	1580	1720
19	2110	2550	3660	5710	8060	9600	5730	4360	2530	2120	1680	1960
20	2110	2500	3710	5650	7160	8870	6400	4450	2480	1910	1720	2280
21	2250	2410	3680	5340	7130	8340	7390	4920	2160	1930	1810	2060
22	2420	2340	3550	5070	7160	7620	8060	6300	1870	1890	1860	2230
23	2370	2260	3390	4890	7510	6810	8510	7160	1770	1790	1810	2170
24	2460	2160	3300	4790	8040	6970	8490	7340	1860	1900	1830	[illegible]
25	2410	2090	3170	4890	8770	6850	8980	7880	1920	2200	1840	2040
26	2330	2090	3110	4940	9330	6680	8460	8490	1910	2270	1960	1910
27	2330	2130	3010	6530	9140	6470	7680	8740	2180	2090	1860	1970
28	2300	2130	2720	6660	8610	6260	7220	9250	2280	2150	1920	1890
29	2550	2150	2520	5990	---	6010	6760	10500	2070	2100	2130	1870
30	2700	2180	2530	5710	---	8380	6530	11800	2280	1960	2560	2000
31	2590	---	2490	5440	---	8830	---	13100	---	1950	2600	---
TOTAL	62500	67830	99330	188920	161070	298210	197680	224910	153670	68360	57170	57930
MEAN	2016	2261	3204	6094	5753	9620	6589	7255	5122	2205	1844	1931
MAX	2700	2550	4500	10400	9330	16800	8980	13100	14000	2960	2600	2480
MIN	1650	2090	2180	2590	3650	6010	4650	4330	1770	1790	1570	1640
AC-FT	124000	134500	197000	374700	319500	591500	392100	446100	304800	135600	113400	114900

CAL YR 1982 TOTAL 1444160 MEAN 3957 MAX 21600 MIN 1250 AC-FT 2864000
WTR YR 1983 TOTAL 1637580 MEAN 4487 MAX 16800 MIN 1570 AC-FT 3248000

12510500 YAKIMA RIVER AT KIONA, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°15'13", long 119°28'37", in SE¼NE¼ sec.19, T.9 N., R.27 E., Benton County, Hydrologic Unit 17030003, on left bank just upstream from abandoned highway bridge pier at Kiona, 0.1 mi upstream from highway bridge, 3.6 mi downstream from Corral Canyon Creek, 5.0 mi downstream from intake of Kiona Canal, and at mile 29.9.

DRAINAGE AREA.--5,615 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to December 1895 (gage heights only, fragmentary), August 1896 to March 1915, February 1933 to current year.

REVISED RECORDS.--WSP 214: 1905. WSP 1122: 1934(M). WSP 1216: 1949-50. WSP 1286: 1907(M), 1909, 1936. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 454.41 ft National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1915, nonrecording gages at approximately same site and datum. Feb. 6, 1933, to July 26, 1934, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records excellent. Diversion above station for irrigation of about 424,000 acres. Flow affected by diversions and by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock lakes. The Kiona Canal bypasses station with a mean flow of approximately 23 ft^3/s for irrigation of about 1,100 acres below station. Diversion by the Kennewick Canal, which bypasses station, began in August 1956, and diverted 91,210 acre-ft during the current water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft^3/s Dec. 23, 1933, gage height, 21.57 ft, from high-water marks; minimum observed, 105 ft^3/s Sept. 11, 1906.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,100 ft^3/s Mar. 15, gage height, 12.41 ft; minimum, 1,520 ft^3/s Aug. 4, gage height, 3.41 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2640	2960	2370	2690	5460	8390	8420	6660	13500	2740	1990	2970
2	2490	2870	2540	2760	5150	7970	8210	7140	13700	3020	1820	2660
3	2200	2840	2430	2780	4710	7840	8090	7310	12600	3210	1620	2470
4	2120	2790	2390	2820	4490	7570	7370	7130	11100	3270	1630	2310
5	2090	2660	4340	3200	4290	7530	6820	6930	9350	3080	1800	1850
6	2090	2570	4930	5690	4120	7470	6390	8000	8190	2920	1770	1800
7	2090	2590	4510	7260	4060	7530	6160	8660	7550	2640	1780	1800
8	2030	2680	4010	7420	4000	8220	6000	8530	6260	2440	1810	1920
9	2230	2600	3650	10000	3930	8640	6030	8250	5680	2320	1890	2040
10	2060	2500	3460	10200	3910	11100	5970	7660	5600	2260	1870	1800
11	2060	2490	3220	10400	3910	14600	5680	6930	5620	2260	1780	1820
12	1990	2500	3010	11200	4280	16600	5330	6470	6230	2080	1780	1950
13	1950	2470	2950	9560	5110	16100	5260	5710	6510	1990	1890	2050
14	1940	2450	2920	8360	4930	16500	5060	5220	6000	21[illegible]0	1900	2180
15	1990	2420	2970	7450	4680	16600	4790	5130	5060	2510	1850	2050
16	2300	2350	3090	6760	4650	14600	4750	5080	4060	2570	1870	1890
17	2220	2390	4630	6270	4930	12800	4980	4690	3320	2400	1760	1910
18	2060	2510	4340	5950	7330	11400	5270	4360	2790	2240	1620	1870
19	2450	2780	3940	5960	8500	10200	5570	4300	2740	2180	1640	2040
20	2690	2840	3890	5900	7450	9340	6120	4360	2770	2160	1760	2410
21	2710	2700	3920	5760	7300	8660	7010	4600	2520	2020	1810	2460
22	3000	2610	3770	5450	7230	7970	7780	5770	2210	2030	1940	2370
23	2890	2530	3600	5220	7570	7130	8390	6790	1980	1950	1930	2500
24	2900	2410	3510	5090	8000	7090	8380	7020	2000	1870	1920	2260
25	2910	2310	3360	5130	8830	6960	8830	7390	2080	2100	1930	2240
26	2850	2300	3290	5170	9440	6870	8610	8090	2120	2390	2020	2180
27	2740	2330	3220	6170	9610	6650	7760	8420	2250	2410	2080	2150
28	2760	2320	2970	7160	9010	6450	7260	8820	2570	2290	2070	2130
29	3030	2340	2700	6340	---	6120	6770	9970	2400	2250	2260	2050
30	3200	2350	2700	5980	---	7820	6420	11200	2400	2110	2640	2180
31	3130	---	2650	5740	---	9350	---	12600	---	2030	3020	---
TOTAL	75810	76460	105280	195840	166880	302070	199480	219190	161160	73900	59450	64310
MEAN	2445	2549	3396	6317	5960	9744	6649	7071	5372	2384	1918	2144
MAX	3200	2960	4930	11200	9610	16600	8830	12600	13700	3270	3020	2970
MIN	1940	2300	2370	2690	3910	6120	4750	4300	1980	1870	1620	1800
AC-FT	150400	151700	208800	388400	331000	599200	395700	434800	319700	146600	117900	127600

CAL YR 1982 TOTAL 1556000 MEAN 4263 MAX 21100 MIN 1500 AC-FT 3086000
WTR YR 1983 TOTAL 1699830 MEAN 4657 MAX 16600 MIN 1620 AC-FT 3372000

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1952 to September 1969 (composite samples), October 1969 to September 1977.
WATER TEMPERATURES: December 1952 to September 1980, March 1981 to February 1982.
SUSPENDED SEDIMENT: June 1977 to October 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)
OCT , 1982 26...	0940	2880	266	7.6	12.0	4.3	9.7	--	E190	E1400	100	0
JAN , 1983 03...	1315	2790	255	8.1	1.5	2.1	13.9	100	37	840	94	0
MAR 07...	1030	7530	186	8.2	7.5	8.2	11.1	95	E210	860	70	5
MAY 09...	1245	8170	145	7.5	12.0	19	10.5	99	80	130	56	0
JUL 26...	1330	2440	280	8.1	23.0	8.2	9.2	109	510	2000	110	0
SEP 22...	1045	2250	265	8.2	13.5	5.7	9.9	97	--	--	100	0

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
OCT , 1982 26...	25	9.0	15	24	.7	3.0	114	18	6.8	.20	24	157
JAN , 1983 03...	23	8.9	15	25	.7	2.4	103	18	6.6	.20	25	162
MAR 07...	17	6.7	9.8	23	.5	1.8	65	11	12	.10	26	113
MAY 09...	14	5.0	6.6	20	.4	1.4	59	8.1	2.8	<.10	19	89
JUL 26...	27	9.5	15	23	.7	3.0	115	16	5.9	.20	23	158
SEP 22...	26	9.0	15	24	.7	2.9	112	16	5.9	.20	23	166

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	ALUMINUM, DISSOLVED (UG/L AS AL)
OCT , 1982 26...	170	.21	1220	19	1.1	.140	1.3	.120	.070	.070	10
JAN , 1983 03...	160	.22	1220	1	1.1	.160	1.0	.120	.080	.060	--
MAR 07...	120	.15	2300	39	.55	.140	1.0	.150	.070	.050	90
MAY 09...	93	.12	1960	--	.43	.090	.60	.110	.050	.030	30
JUL 26...	170	.21	1040	4	1.4	.040	1.3	.190	.120	.060	20
SEP 22...	170	.23	1010	22	1.1	.060	.70	.080	.050	.030	--

E Estimated value.

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)
OCT , 1982											
26...	2	26	<.5	<1	<1	<3	3	14	2	12	6
JAN , 1983											
03...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	1	21	<.5	<1	<1	<3	2	63	1	<4	6
MAY											
09...	1	14	<.5	<1	<1	<3	2	41	2	<4	6
JUL											
26...	2	31	2	1	<1	<3	3	31	<1	9	14
SEP											
22...	--	--	--	--	--	--	--	--	--	--	--

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDIMENT, SUS-PENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1982											
26...	<.1	<10	1	<1	<1	120	<6	4	40	311	--
JAN , 1983											
03...	--	--	--	--	--	--	--	--	93	701	--
MAR											
07...	<.1	<10	<1	<1	<1	80	<6	3	111	2260	71
MAY											
09...	<.1	<10	1	<1	<1	63	<6	8	63	1390	72
JUL											
26...	<.1	<10	2	<1	<1	120	9	4	49	323	69
SEP											
22...	--	--	--	--	--	--	--	--	25	.52	--

12512550 PROVIDENCE COULEE NEAR CUNNINGHAM, WA

LOCATION.--Lat 46°48'11", long 118°48'55", in SE¼NE¼ sec.8, T.15 N., R.32 E., Adams County, Hydrologic Unit 17020016, on right bank 0.5 mi downstream from Gillis Road, 0.8 upstream from State Highway 26, and 1.4 mi southwest of Cunningham.

DRAINAGE AREA.--52.1 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,115 ft, from topographic map.

REMARKS.--Records poor. No known diversions.

AVERAGE DISCHARGE.--6 years, 0.56 ft³/s, 407 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 711 ft³/s Feb. 9, 1979, gage height, 5.40 ft; no flow most of the time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 21, 1956, reached a discharge of 2,160 ft³/s at a site 1.5 mi upstream, at station 12512500 Providence Coulee at Cunningham.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 6.0 ft³/s Jan. 6; no flow most of the time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	1.5	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.55	2.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.00	.00	.02	.06	.00	.00	.00	.00	.00	.00	.00	.00
MAX	.00	.00	.50	1.5	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	1.1	4.0	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1982	TOTAL	220.68	MEAN	.60	MAX	182	MIN	.00	AC-FT	438
WTR YR 1983	TOTAL	2.55	MEAN	.01	MAX	1.5	MIN	.00	AC-FT	5.1

12513000 ESQUATZEL COULEE AT CONNELL, WA

LOCATION.--Lat 46°39'49", long 118°51'44", in SE¼SW¼SE¼ sec.36, T.14 N., R.31 E., Franklin County, Hydrologic Unit 17020016, on right bank at upstream end of Clark Street Bridge, in Connell, 2.3 mi downstream from left bank tributary, and 7.8 mi downstream from Hatton Coulee.

DRAINAGE AREA.--234 mi², approximately.

PERIOD OF RECORD.--January 1953 to current year. Records published for period August 1959 to September 1964 include effluent from sewage treatment plant 0.8 mi downstream; records adjusted to exclude effluent October 1964 to June 1967.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 830 ft, from topographic map. Prior to Aug. 7, 1959, at site 0.4 mi downstream at different datum, Aug. 7, 1959, to July 8, 1967, at site 0.9 mi downstream at different datum, and July 9, 1967, to Oct. 28, 1981, at site 0.7 mi downstream at different datum.

REMARKS.--Records good except for flow during winter period, which is poor. No diversion above station.

AVERAGE DISCHARGE.--31 years, 1.32 ft³/s, 956 acre-ft/yr, adjusted for effluent from sewage treatment plant 1959-64.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,560 ft³/s Feb. 21, 1956, gage height, '2.68 ft, site and datum then in use; no flow most of the time.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11 ft³/s Oct. 22, gage height, 0.51 ft. No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	.00	.00	.00	.00	.00	.00	.01	.60	5.2	3.4	.72
2	.36	.00	.00	.00	.00	.00	.00	.00	1.2	3.1	2.5	.63
3	.00	.00	.00	.00	.00	.00	.00	.01	.56	1.7	3.0	1.2
4	.00	.00	.00	.00	.00	1.0	.00	.49	.82	.16	3.1	2.8
5	.44	.00	.00	.00	.00	.00	.00	1.0	.56	.46	2.5	2.5
6	1.7	.00	.00	.49	.00	.00	.00	.88	1.2	.81	2.7	2.5
7	1.2	.00	.00	.00	.00	.00	.00	1.1	1.7	1.7	3.1	2.1
8	.24	.00	.00	.00	.00	.00	.00	.19	1.2	3.3	3.1	2.6
9	.00	.00	.00	.00	.00	.00	.00	.08	.99	4.2	2.6	2.0
10	.03	.00	.00	.00	.00	.00	.00	.30	.94	3.0	2.5	.41
11	.01	.00	.00	.00	.00	.00	.00	.05	4.0	3.5	3.0	3.4
12	.00	.00	.00	.00	.00	.00	.00	.00	2.0	2.1	3.4	3.4
13	1.9	.00	.00	.00	.00	.00	.00	.38	.99	1.7	3.0	1.6
14	1.3	.00	.28	.00	.00	.00	.00	.02	1.2	4.0	2.0	2.9
15	.12	.00	.70	.00	.00	.00	.00	.00	4.0	4.3	.76	2.0
16	.16	.00	.00	.00	.00	.00	.00	.00	1.8	1.9	2.0	1.2
17	.01	.00	.00	.00	.00	.00	.00	.00	3.0	3.0	.33	1.0
18	.57	.00	.00	.00	.00	.00	.00	.03	3.2	3.6	1.6	.37
19	3.8	.00	.00	.00	.00	.00	.00	.03	3.2	2.8	2.3	1.7
20	2.0	.00	.00	.00	.00	.00	.00	1.4	2.7	3.6	2.2	1.7
21	4.2	.00	.00	.00	.00	.00	.00	4.0	1.7	.96	2.9	1.8
22	4.4	.00	.00	.00	.00	.00	.00	2.0	.23	.00	2.2	2.1
23	4.7	.00	.00	.00	.00	.00	.11	1.6	2.4	1.3	2.7	2.1
24	3.0	.00	.00	.00	.00	.00	.00	1.4	4.3	.56	3.6	2.0
25	4.3	.00	.00	.00	.00	.00	.00	1.3	3.8	1.9	2.6	1.8
26	5.2	.00	.00	.00	.00	.00	.88	.93	.47	3.5	1.4	1.5
27	1.8	.00	.00	.00	.00	.00	.13	.56	.08	2.8	2.3	1.5
28	1.1	.00	.00	.00	.00	.00	.00	.25	4.7	3.0	2.1	2.2
29	.80	.00	.00	.00	---	1.2	.14	.06	2.9	2.2	2.3	3.2
30	.00	.00	.00	.00	---	.14	.76	.84	4.4	2.3	.67	2.5
31	.00	---	.00	.00	---	.00	---	1.1	---	3.1	.10	---
TOTAL	44.16	.00	.98	.49	.00	2.34	2.02	20.01	60.84	75.75	71.36	57.43
MEAN	1.42	.00	.03	.02	.00	.07	.07	.65	2.03	2.44	2.32	1.91
MAX	5.2	.00	.70	.49	.00	1.2	.88	4.0	4.7	5.2	3.6	3.4
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.10	.37
AC-FT	88	.00	1.9	.0	.00	4.6	4.0	40	121	150	143	114

CAL YR 1982 TOTAL 694.95 MEAN 1.90 MAX 436 MIN .00 AC-FT 1380
WTR YR 1983 TOTAL 335.98 MEAN .92 MAX 5.2 MIN .00 AC-FT 666

12514000 COLUMBIA RIVER AT PASCO, WA

LOCATION.--Lat 46°13'40", long 119°08'03", in NW¼NW¼ sec.36, T.9 N., R.29 E., Franklin County, Hydrologic Unit 17020016, in bridge pier on U.S. Highway 12 between Pasco and Kennewick, 5.2 mi downstream from Yakima River, 5.8 mi upstream from Snake River, and at mile 330.0.

DRAINAGE AREA.--104,000 mi², approximately.

PERIOD OF RECORD.--October 1963 to September 1966 (discharge); October 1979 to current year (elevations only). Fragmentary records of gage height for other years in files of U.S. Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Corps of Engineers).

REMARKS.--Records good. Gage is within the pool formed by McNary Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 346.09 ft June 17, 1964; minimum, 336.07 ft Oct. 20, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 342.64 ft June 1; minimum, 336.07 ft Oct. 20.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339.41	339.99	339.58	339.76	340.38	340.52	341.32	340.61	341.38	339.81	340.22	339.75
2	339.54	339.46	337.25	339.64	340.65	340.60	341.02	340.57	340.53	340.01	340.61	339.27
3	339.49	339.46	338.47	339.53	340.39	340.64	340.72	340.54	340.77	339.89	340.03	339.84
4	339.88	339.68	339.16	339.70	340.47	340.75	340.80	340.67	340.69	339.55	340.06	339.53
5	340.08	339.40	339.44	339.62	339.87	340.64	340.63	341.07	340.57	340.43	340.02	339.32
6	339.85	339.89	339.60	339.49	339.23	340.55	340.69	341.25	340.13	340.27	340.05	339.08
7	339.88	339.79	339.42	339.61	340.03	340.75	339.79	341.07	340.34	339.38	[illegible]	339.31
8	339.69	339.74	339.35	339.54	339.41	340.24	340.38	340.86	340.78	338.71	339.78	338.07
9	339.90	339.85	339.71	339.62	339.32	340.01	340.47	340.56	340.20	338.64	339.96	338.79
10	339.37	339.71	339.64	339.37	340.00	339.94	340.67	340.84	340.33	339.54	340.26	339.12
11	339.72	339.77	339.88	340.11	339.47	340.34	340.60	340.89	340.18	340.14	340.19	337.85
12	339.63	339.81	339.40	340.47	338.84	339.24	340.64	340.09	339.78	340.10	340.24	337.70
13	339.38	339.99	338.81	340.64	338.76	339.37	340.50	341.04	339.93	339.89	340.06	338.75
14	339.58	339.81	338.83	340.75	339.17	340.65	340.61	340.56	339.25	339.19	340.30	339.00
15	339.23	338.90	339.04	340.04	340.09	341.08	340.61	340.21	338.48	340.09	340.10	338.79
16	338.87	337.66	339.61	339.90	339.04	341.53	340.28	339.02	338.75	339.00	340.36	338.74
17	338.31	337.18	339.68	340.30	338.94	341.55	340.10	338.75	339.22	339.14	340.34	338.55
18	337.96	337.35	339.86	340.52	339.11	340.52	339.74	339.93	338.74	340.32	340.37	338.21
19	336.93	338.93	339.76	339.69	340.02	340.99	339.30	340.24	339.41	340.31	340.25	338.49
20	336.61	339.85	339.50	338.72	339.91	341.29	339.12	339.37	339.17	340.27	340.10	338.71
21	338.07	339.65	339.32	338.34	339.34	340.66	339.76	338.76	339.43	339.89	339.98	339.05
22	339.69	339.42	339.63	338.61	---	339.19	340.73	339.08	339.52	339.69	339.77	338.02
23	339.99	339.47	339.26	339.35	---	338.62	340.80	339.12	338.98	340.06	339.55	339.11
24	339.83	339.24	339.70	339.89	---	338.54	340.85	339.90	339.33	339.88	339.49	338.55
25	339.93	339.99	339.60	340.02	337.97	340.15	341.81	340.55	340.23	339.93	339.08	338.95
26	339.99	339.91	339.44	339.65	339.32	340.99	341.12	340.34	339.74	340.63	339.78	339.04
27	340.12	339.91	339.68	339.44	340.07	341.29	341.33	340.87	340.06	340.18	339.06	338.95
28	339.98	339.83	340.04	339.55	340.74	341.32	341.08	340.46	340.33	340.34	338.91	338.61
29	340.16	339.48	339.88	339.54	---	341.44	340.85	340.71	340.40	340.60	338.71	338.50
30	340.24	339.81	339.94	339.59	---	341.32	340.54	341.08	340.03	340.38	339.35	338.83
31	340.01	---	339.73	340.40	---	341.38	---	341.36	---	340.50	339.69	---
MEAN	339.40	339.43	339.43	339.72	---	340.52	340.56	340.33	339.89	339.90	339.87	338.82
MAX	340.24	339.99	340.04	340.75	---	341.55	341.81	341.36	341.38	340.63	340.61	339.84
MIN	336.61	337.18	337.25	338.34	---	338.54	339.12	338.75	338.48	338.64	338.71	337.70

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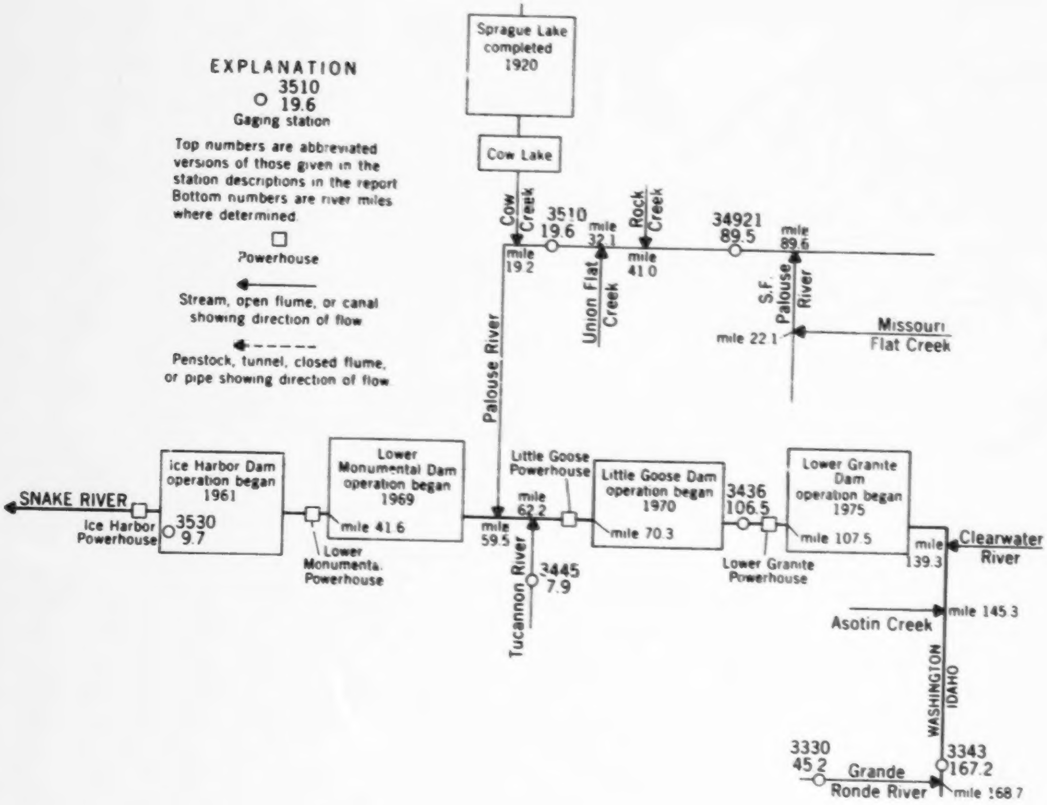
EXPLANATION
3510
19.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
Sprague Lake completed 1920
Cow Lake
Cow Creek
mile 19.2
3510 19.6
mile 32.1
Union Flat Creek
Rock Creek
mile 41.0
34921 89.5
mile 89.6
S.F. Palouse River
mile 22.1
Missouri Flat Creek
Palouse River
SNAKE RIVER
Ice Harbor Powerhouse
Ice Harbor Dam operation began 1961
3530 9.7
Lower Monumental Dam operation began 1969
mile 41.6
Lower Monumental Powerhouse
mile 59.5
mile 62.2
Tucannon River
3445 7.9
Little Goose Powerhouse
Little Goose Dam operation began 1970
mile 70.3
3436 106.5
Lower Granite Powerhouse
Lower Granite Dam operation began 1975
mile 107.5
mile 139.3
Clearwater River
mile 145.3
Asotin Creek
WASHINGTON
IDAHO
3330 45.2
Grande Ronde River
3343 167.2
mile 168.7

Figure 30.—Gaging stations in Snake River basin.

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13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'47", long 117°26'54", in NE¼NW¼ sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank 500 ft downstream from bridge at Troy, 600 ft downstream from Wenaha River, and at mile 45.2.

DRAINAGE AREA.--3,275 mi².

PERIOD OF RECORD.--August 1944 to current year. Monthly discharge only August 1944, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1946(M), 1948-50.

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft National Geodetic Vertical Datum of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at site 500 ft upstream at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at site 500 ft upstream at datum 1.15 ft higher.

REMARKS.--Records excellent. Flow slightly regulated by Wallowa Lake (see station 13326000) and small reservoirs. Diversions for irrigation above station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Big Sheep Creek and tributaries in Imnaha River basin for irrigation in Wallowa Valley.

AVERAGE DISCHARGE.--39 years, 3,132 ft³/s, 2,269,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s Dec. 23, 1964, gage height, 11.25 ft; minimum, 344 ft³/s Aug. 19-21, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 18	2000	12,900	7.06	Mar. 13	2030	*13,000	*7.07
Mar. 4	2300	10,400	6.53	May 29	0730	12,500	6.98

Minimum, 777 ft³/s Sept. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	1510	1320	980	2100	5490	6470	5380	9280	4870	1440	894
2	1050	1480	1280	1050	2010	5950	6270	5610	8650	5630	1400	959
3	1090	1390	1430	1140	1830	6950	5900	5500	7980	5210	1330	955
4	1170	1370	2080	1300	1680	8290	5450	5510	7450	4650	1270	935
5	1170	1350	2280	1590	1540	9960	5010	5730	6880	4530	1170	940
6	1120	1460	2600	3680	1500	9590	4650	5900	6320	4860	1110	922
7	1140	1440	2810	6840	1510	8960	4400	5850	6100	5220	1070	894
8	1190	1380	2450	7320	1570	8740	4150	5850	6110	4670	1030	865
9	1150	1350	2060	6170	1630	9090	3930	5670	6360	4350	1020	829
10	1120	1320	1760	5210	1690	9410	3840	5360	6330	3790	1070	809
11	1130	1280	1530	4740	1790	10400	3670	5000	6640	3380	1170	918
12	1130	1230	1440	4270	2350	10700	3470	4730	5850	3270	1150	923
13	1110	1230	1510	3500	3180	11400	3310	4510	5340	3280	1080	843
14	1100	1180	1550	3000	3000	11900	3150	4390	4820	3580	1010	810
15	1080	1110	1610	2680	2840	10400	3030	4520	5020	3330	972	801
16	1110	1120	1930	2510	3400	9170	2970	4510	5240	2800	970	791
17	1150	1270	2350	2390	4810	8200	3030	4410	5000	2500	961	781
18	1170	1350	2320	2260	10300	7340	3230	4550	5560	2340	938	794
19	1130	1430	2120	2160	10300	6530	3480	4700	5250	2270	900	868
20	1100	1390	1970	2120	7660	5860	3870	4860	4620	2370	888	879
21	1090	1350	2060	2060	6260	5340	4610	5540	4130	2400	893	832
22	1110	1240	2580	1970	6040	4910	5170	6010	3820	2160	977	848
23	1220	1090	2380	1920	6640	4620	5520	6580	4120	2070	1090	842
24	1320	1040	2080	1920	6910	4350	6660	7480	4610	2190	1170	846
25	1290	1050	1780	1900	7220	4100	6670	8590	4450	2110	1140	828
26	1320	1120	1560	2080	7450	3910	6230	9890	4270	1960	1080	818
27	1540	1150	1390	2480	6740	3810	5820	10600	4670	1800	1000	797
28	1380	1210	1260	2760	6000	3800	5480	11100	4760	1670	962	790
29	1550	1290	1150	2430	---	3860	5200	11800	4750	1540	931	791
30	1550	1360	1050	2320	---	6990	5210	11400	5040	1480	909	804
31	1530	---	960	2220	---	7140	---	10800	---	1430	886	---
TOTAL	37370	38540	56650	88970	119950	227160	139850	202330	169420	97710	32987	25606
MEAN	1205	1285	1827	2870	4284	7328	4662	6527	5647	3152	1064	854
MAX	1550	1510	2810	7320	10300	11900	6670	11800	9280	5630	1440	959
MIN	1050	1040	960	980	1500	3800	2970	4390	3820	1430	886	781
AC-FT	74120	76440	112400	176500	237900	450600	277400	401300	336000	193800	65430	50790

CAL YR 1982 TOTAL 1471303 MEAN 4031 MAX 23000 MIN 762 AC-FT 2918000
WTR YR 1983 TOTAL 1236543 MEAN 3388 MAX 11900 MIN 781 AC-FT 2453000

13334300 SNAKE RIVER NEAR ANATONE, WA

LOCATION.--Lat 46°05'50", long 116°58'36", in SE¼SE¼NE¼ sec.12, T.7 N., R.46 E., Asotin County, Hydrologic Unit 17060103, on left bank 1.2 mi downstream from Grand Ronde River, 7.8 mi east of Anatone, 22 mi south of Clarkston, and at mile 167.2.

DRAINAGE AREA.--92,960 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1958 to current year.

REVISED RECORDS.--WDR WA-76-2: 1974 and 1975.

GAGE.--Water-stage recorder. Datum of gage is 806.78 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records excellent. Diversions above station for irrigation of about 4,090,000 acres of which about 750,000 acres are by withdrawal from ground water. Flow regulated by many reservoirs above station with a total usable capacity of more than 10,000,000 acre-feet, the most effective of which is Brownlee Reservoir 117.8 mi upstream (see sta 13289700). Diurnal fluctuations caused by Hells Canyon powerplant.

AVERAGE DISCHARGE.--25 years, 36,870 ft³/s, 26,710,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 195,000 ft³/s June 18, 1974, gage height, 24.45 ft; minimum, 6,010 ft³/s Sept. 2, 1958, gage height, 1.29 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 150,000 ft³/s May 31, gage height, 20.25 ft; minimum, 13,700 ft³/s Aug. 31, gage height, 3.64 ft.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

3.0	11000	16.0	107000
5.0	20000	18.0	127000
8.0	38000	21.0	157000
11.0	62000		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28800	31400	38100	34400	43600	64100	67400	78300	146000	73800	22000	26600
2	28400	32800	35800	34600	43500	65200	66700	79900	142000	78200	28400	24900
3	27100	33000	30800	35300	42800	68100	66700	81200	135000	81100	28700	22700
4	28500	31800	36800	36600	41400	73000	66300	86600	130000	81200	27000	22300
5	28100	31000	38900	37900	36200	82400	69000	92100	127000	75400	23200	21700
6	28800	30600	39100	43700	35800	82100	68500	94600	125000	72900	24400	25600
7	28600	30800	38800	49600	35900	81200	68900	96300	127000	71900	20400	26800
8	28700	31500	38600	56700	36400	80600	68200	95100	128000	70100	20200	27500
9	28600	31300	34300	62700	36800	81300	67800	94300	129000	68300	21600	27200
10	28400	31700	35500	58100	37000	82000	67500	92900	132000	60900	21000	26800
11	28100	31900	34700	56100	37300	84500	67400	91200	134000	60200	19900	26200
12	28100	31600	34800	54000	37600	87500	67100	89600	130000	59800	22400	25900
13	27900	30700	34400	49500	38800	88500	66500	88100	123000	57000	23000	23600
14	28000	30700	34800	46800	38800	91400	66200	87100	115000	55900	26200	26500
15	28100	30800	34700	42600	40100	94000	56700	87000	110000	56900	26200	25200
16	28000	30600	37100	39100	44100	91100	51900	87300	106000	55700	25100	25600
17	28100	29500	34400	39400	46400	88800	50200	87200	100000	53300	27500	20800
18	28200	31000	37300	38400	56200	86900	46500	86800	101000	48200	27600	20800
19	28200	31700	37300	38500	61200	85700	38300	83500	102000	46800	27300	24600
20	27900	32000	37800	39900	57900	84000	40300	79700	96700	39900	26700	22600
21	27800	31400	37800	38700	55800	82100	43200	77600	88800	36000	24100	25500
22	27800	31400	40300	38600	55500	80300	46300	83400	83800	34000	21600	24000
23	28200	30900	55100	38400	59500	67900	57000	89800	75300	31400	28400	22900
24	28800	29200	50700	38100	59700	65800	72700	96200	68300	27800	31700	22600
25	30300	28500	42400	38000	60500	65200	78300	102000	69400	27000	35600	23800
26	30600	27200	38200	41000	66100	64300	78200	112000	72300	28800	36200	24300
27	31700	29800	37300	43400	66000	63600	80300	126000	74900	27800	35900	23400
28	31800	29700	36600	44100	65100	63400	81100	134000	74400	28700	35600	20800
29	37800	30800	36400	44100	---	63100	79100	141000	76900	27200	35700	18500
30	39700	31300	35800	44100	---	65500	78100	146000	75700	25100	24800	21400
31	39300	---	34500	43800	---	67800	---	148000	---	22900	21900	---
TOTAL	918400	926600	1169100	1346200	1336000	2391400	1922400	3014800	3198500	1584200	820300	721100
MEAN	29630	30890	37710	43430	47710	77140	64080	97250	106600	51100	26460	24040
MAX	39700	33000	55100	62700	66100	94000	81100	148000	146000	81200	36200	27500
MIN	27100	27200	30800	34400	35800	63100	38300	77600	68300	22900	19900	18500
AC-FT	1822000	1838000	2319000	2670000	2650000	4743000	3813000	5980000	6344000	3142000	1627000	1430000

CAL YR 1982 TOTAL 19300900 MEAN 52880 MAX 145000 MIN 16800 AC-FT 38280000
WTR YR 1983 TOTAL 19349000 MEAN 53010 MAX 148000 MIN 18500 AC-FT 38380000

13334300 SNAKE RIVER NEAR ANATONE. WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Oct. 1972 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1959 to current year.

INSTRUMENTATION.--Temperature recorder since October 1959.

COOPERATION.--Temperature records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum (1959-68, 1970-83), 25.5°C July 15, 1981; minimum, 0.0°C several days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 23.5°C Aug. 5-11; minimum, 1.5°C Jan. 4, 6, 15, 16.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	15.5	15.0	11.5	10.5	7.0	6.5	2.5	2.0			---	---
2	15.5	15.5	11.0	10.0	6.5	6.5	2.5	2.0			---	---
3	16.0	15.0	10.5	10.0	7.0	6.0	2.5	2.0			---	---
4	15.0	14.5	10.5	10.0	7.0	7.0	2.5	1.5			---	---
5	15.0	14.5	10.5	10.0	7.0	6.5	2.5	2.0			---	---
6	14.5	14.0	10.5	9.5	6.5	6.0	2.5	1.5			---	---
7	14.5	14.0	10.0	9.0	6.0	6.0	3.0	2.0			---	---
8	14.0	13.5	9.5	8.5	5.5	5.0	3.5	3.0			---	---
9	14.0	13.5	9.5	8.5	5.0	4.5	3.5	3.0			---	---
10	14.0	13.5	9.5	8.5	4.5	4.5	3.5	3.5			8.0	7.5
11	14.0	12.5	9.5	8.5	4.5	4.5	3.5	3.0			8.0	7.5
12	14.0	13.5	9.5	8.0	5.0	4.5	3.0	2.5			7.5	7.0
13	14.0	13.5	9.0	8.0	4.5	4.5	2.5	2.0			7.5	7.0
14	14.0	13.5	8.5	7.5	4.5	4.5	2.5	2.0			7.5	7.0
15	14.0	14.0	8.0	7.0	5.0	4.5	2.0	1.5			7.5	7.0
16	14.5	14.0	8.0	7.5	5.5	5.0	2.0	1.5			7.5	7.0
17	14.0	13.5	8.5	7.5	5.5	5.0	2.0	2.0			8.0	6.0
18	13.5	13.0	8.5	7.5	5.0	4.5	2.0	2.0			8.0	7.5
19	13.0	11.5	8.0	7.0	4.5	4.5	2.0	2.0			8.0	7.5
20	12.0	12.0	8.0	7.0	5.0	4.5	2.5	2.0			8.0	7.5
21	12.0	12.0	8.0	6.5	5.0	5.0	2.5	2.5			8.5	7.5
22	12.5	12.0	7.5	6.5	5.0	5.0	2.5	2.5			8.5	8.0
23	13.0	12.5	7.0	6.0	5.0	5.0	3.0	2.5			8.5	8.0
24	13.0	12.5	6.5	6.0	4.5	4.0	3.0	2.5			8.5	8.0
25	12.5	12.5	7.0	5.5	4.0	3.5	3.0	2.5			8.5	8.0
26	12.5	12.0	6.5	5.5	4.0	3.5	3.0	3.0			8.5	8.0
27	12.0	11.5	6.5	5.5	3.5	3.5	3.5	3.0			8.5	8.0
28	11.5	11.5	6.5	6.0	3.5	2.5	---	---			8.0	7.5
29	12.0	11.5	7.0	6.0	3.0	2.5	---	---			8.5	8.0
30	12.0	11.5	7.0	5.5	3.0	2.5	---	---			8.5	8.0
31	11.5	11.5	---	---	2.5	2.5	---	---			8.5	7.5
MONTH	16.0	11.5	11.5	5.5	7.0	2.5	---	---			---	---

13334300 SNAKE RIVER NEAR ANATONE, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	8.5	7.5	12.5	12.0	13.0	12.5	16.0	15.5	22.0	21.0	21.5	21.0
2	9.5	8.0	12.5	11.5	13.5	13.0	15.5	15.0	22.5	21.0	21.5	21.0
3	8.0	7.5	12.5	11.5	14.0	13.5	15.5	14.5	22.5	21.5	21.5	20.5
4	8.5	7.5	13.0	11.5	14.5	13.5	16.5	15.0	23.0	21.5	21.0	20.5
5	8.5	7.5	12.5	11.5	14.5	13.5	17.5	16.0	23.5	22.0	21.0	20.0
6	9.0	7.5	12.0	11.5	14.5	13.5	18.5	17.5	23.5	22.0	21.0	20.0
7	8.5	8.0	12.0	11.5	15.5	14.0	18.0	17.5	23.5	22.0	21.0	20.0
8	9.0	8.5	12.0	11.5	15.5	14.5	17.5	17.5	23.5	22.5	20.5	19.5
9	9.0	8.5	11.5	11.0	15.0	14.5	17.5	17.0	23.5	22.5	20.0	19.5
10	9.0	8.5	12.0	11.5	14.5	14.0	17.5	16.5	23.5	22.5	19.5	18.5
11	9.0	8.5	12.0	11.0	14.0	13.5	18.0	17.5	23.5	22.0	19.5	18.5
12	9.0	8.5	12.5	11.5	14.0	13.0	17.5	17.0	22.5	21.5	20.0	19.0
13	9.0	8.0	12.5	11.5	14.5	13.5	18.0	17.0	23.0	21.5	19.5	19.0
14	9.5	8.5	12.5	11.5	15.0	14.0	18.5	18.0	23.0	22.0	20.0	19.5
15	9.5	8.5	12.5	12.0	15.5	15.0	18.0	17.5	23.0	22.0	20.0	19.0
16	10.0	9.5	12.0	11.5	16.0	15.0	18.0	17.0	22.5	22.0	19.5	19.0
17	10.5	9.5	12.5	11.5	16.0	15.5	17.5	17.5	22.5	21.5	19.0	18.0
18	11.0	10.5	12.5	12.0	15.5	15.0	18.5	17.5	22.0	21.5	18.0	17.5
19	11.5	10.5	13.0	11.5	15.0	14.5	19.0	18.5	22.5	21.5	17.5	17.0
20	12.0	11.0	13.5	12.5	15.0	14.0	19.5	19.0	22.0	22.0	17.5	17.0
21	11.5	10.5	14.0	13.0	15.0	14.5	20.0	18.5	22.0	22.0	17.5	17.0
22	11.5	10.5	14.0	13.0	15.5	15.0	20.5	19.0	22.0	21.0	17.5	17.0
23	11.0	10.5	14.5	13.0	16.0	15.5	21.0	19.5	22.0	21.0	17.0	16.5
24	10.5	10.0	14.0	13.5	16.0	15.5	20.5	20.0	22.0	21.0	17.5	17.0
25	10.5	9.5	14.0	13.5	16.5	15.5	20.0	19.5	22.5	21.5	18.0	17.0
26	10.5	10.0	13.5	13.0	17.0	16.0	20.5	19.5	22.0	21.5	17.5	17.5
27	11.0	9.5	13.0	12.5	17.0	16.0	20.0	19.5	22.0	21.5	17.5	17.0
28	11.5	10.5	13.0	12.5	16.5	15.5	21.0	19.5	22.0	21.5	17.0	15.5
29	12.0	11.0	13.0	12.5	16.5	15.5	21.5	20.0	22.0	21.5	16.0	15.0
30	12.5	11.5	13.0	12.5	16.0	15.0	22.0	20.5	22.0	21.5	16.0	15.0
31	---	---	13.0	12.5	---	---	21.5	21.0	22.0	21.0	---	---
MONTH	12.5	7.5	14.5	11.0	17.0	12.5	22.0	14.5	23.5	21.0	21.5	15.0

13343600 SNAKE RIVER BELOW LOWER GRANITE DAM, WA

LOCATION.--Lat 46°40'04", long 117°26'38", in NE¼SE¼ sec.30, T.14 N., R.43 E., Garfield County, Hydrologic Unit 17060107, 1.0 mi below Lower Granite Dam, 16.0 mi northeast of Pomeroy, and at mile 106.5.

DRAINAGE AREA.--103,500 mi^2, approximately.

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is 600 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Discharges for Dec. 2-7, Dec. 12 to Jan. 1, Feb. 20 to Apr. 13, Apr. 22 to May 10, May 27 to June 11, June 13, 22-30, and Aug. 25 to Sept. 20 were provided by Corps of Engineers N.P.D. Reservoir Control Center. Regulation by Lower Granite Dam 1.0 mi upstream and by other storage reservoirs above station. Diversions above station for irrigation of over 4,090,000 acres.

AVERAGE DISCHARGE.--5 years, 53,960 ft^3/s, 39,090,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 206,000 ft^3/s June 18, 1982; minimum daily, 7,600 ft^3/s Feb. 17, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 198,000 ft^3/s May 29; minimum daily, 19,900 ft^3/s Aug. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34000	42800	49400	44300	51700	87300	92100	104000	184000	88000	32700	32500
2	31900	44500	47200	39000	52200	83200	89900	106000	177000	91300	28900	27300
3	31600	34800	43600	45100	48200	86200	89400	107000	176000	103000	38600	30500
4	28000	25900	49100	44700	44600	91800	93800	108000	167000	103000	38300	23300
5	32000	36000	45600	46600	38800	109000	81000	117000	161000	89300	27500	25100
6	34700	36800	52100	60900	34800	115000	90400	121000	156000	89100	30000	29000
7	33400	34300	50200	64300	40600	99900	82100	122000	158000	82900	23500	31700
8	33400	43400	46700	78200	37500	108000	76300	114000	165000	86400	24900	37100
9	35300	40900	45300	75800	42700	106000	73800	119000	152000	77100	25400	33700
10	36700	24000	40000	81400	39800	111000	80700	112000	165000	70300	25700	43000
11	41200	37400	53200	66500	45300	115000	72200	105000	163000	78000	26400	30700
12	26200	36500	43300	69900	37900	118000	75300	106000	151000	79400	27400	38900
13	27800	35300	39500	59500	40700	121000	80700	97600	151000	72900	29000	28500
14	29700	34700	48600	59600	46800	122000	72900	93300	133000	68400	27000	38100
15	32600	32900	41900	46300	45600	126000	61600	98000	126000	64600	33100	35800
16	32300	36600	47500	42000	51800	120000	55100	105000	129000	59400	29300	35500
17	32500	36000	47000	56300	55200	119000	51200	104000	119000	66300	31000	31900
18	33100	40700	43500	47900	66400	119000	50800	93000	122000	62400	31400	26000
19	32400	49900	55600	46300	85300	116000	48000	93000	124000	53400	36800	30800
20	32300	41300	49600	49600	84000	111000	49200	92000	120000	53500	37300	34000
21	33200	37100	46400	51000	80600	105000	47400	92100	108000	40500	26900	35600
22	31100	43700	52700	45600	74700	108000	59000	98900	100000	43000	19900	37100
23	32700	37600	64100	45700	83400	97900	75400	109000	92600	41700	28200	30800
24	33000	36400	63800	51500	79600	84600	103000	118000	85400	34200	38800	38100
25	34600	38600	45400	44100	82400	84900	107000	129000	81700	36100	37500	31800
26	35900	33500	37900	50200	90700	76900	111000	147000	87300	37800	43100	31200
27	34600	34100	45500	52000	91100	87000	108000	170000	87600	33400	42000	32900
28	41000	35200	46400	56000	89700	81200	103000	187000	88300	35900	34800	31900
29	41900	37300	45600	53500	---	79300	99400	198000	94100	34000	40200	27900
30	45500	40700	47100	51100	---	77700	102000	192000	94900	34500	33500	31900
31	45000	---	43200	54700	---	85800	---	192000	---	26200	20700	---
TOTAL	1059600	1118900	1477000	1679600	1662100	3152700	2381700	3749900	3918900	1936000	969800	972600
MEAN	34180	37300	47650	54180	59360	101700	79390	121000	130600	62450	31280	32420
MAX	45500	49900	64100	81400	91100	126000	111000	198000	184000	103000	43100	43000
MIN	26200	24000	37900	39000	34800	76900	47400	92000	81700	26200	19900	23300
AC-FT	2102000	2219000	2930000	3331000	3297000	6253000	4724000	7438000	7773000	3840000	1924000	1929000

CAL YR 1982 TOTAL 26475600 MEAN 72540 MAX 206000 MIN 18600 AC-FT 52514000
WTR YR 1983 TOTAL 24078800 MEAN 65970 MAX 198000 MIN 19900 AC-FT 47760000

13344500 TUCANNON RIVER NEAR STARBUCK, WA

LOCATION.--Lat 46°30'17", long 118°03'55", in NE¼SW¼ sec.21, T.12 N., R.38 E., Columbia County, Hydrologic Unit 17060107, on right bank 180 ft downstream from county road bridge, 0.5 mi downstream from Smith Hollow, 3.0 mi east of Starbuck, 3.3 mi downstream from Pataha Creek, and at mile 7.9.

DRAINAGE AREA.--431 mi².

PERIOD OF RECORD.--October 1914 to September 1917, August 1928 to September 1931, October 1958 to current year. Monthly discharge only for October and November 1914, published in WSP 1317.

REVISED RECORDS.--WSP 1347: 1930.

GAGE.--Water-stage recorder. Elevation of gage is 735.9 ft, from plane table survey. Nov. 8, 1914, to Sept. 30, 1917, nonrecording gage at site 2.8 mi upstream at different datum. Aug. 9, 1928, to Sept. 30, 1931, nonrecording gages at site 2.5 mi upstream at various datums.

REMARKS.--Records good. Many small diversions for irrigation above the station.

AVERAGE DISCHARGE.--31 years (water years 1915-17, 1929-31, 1959-83), 175 ft³/s, 126,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,980 ft³/s Dec. 22, 1964, gage height, 9.84 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; minimum, 15 ft³/s July 11, 12, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 429 ft³/s, 0200 hours, Jan. 7, gage height, 2.00 ft, no peak above base of 700 ft³/s; maximum gage height, 2.04 ft May 30; minimum, 53 ft³/s Aug. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	102	115	119	161	247	355	218	363	131	70	69
2	95	100	112	110	156	261	340	221	325	150	62	70
3	100	95	126	119	148	247	310	218	295	140	64	69
4	102	93	136	122	140	278	288	218	271	128	61	70
5	102	95	148	158	136	313	264	221	250	117	59	70
6	100	112	156	245	133	303	237	237	221	110	59	69
7	95	112	156	387	138	299	225	234	200	108	62	66
8	97	104	148	375	136	292	212	254	191	104	64	67
9	97	102	140	371	148	281	203	237	191	102	58	66
10	95	100	136	332	158	285	194	221	188	100	58	67
11	93	100	131	292	150	328	188	206	191	95	70	93
12	95	95	131	257	150	344	180	197	177	87	69	87
13	93	100	136	231	161	336	172	191	172	91	66	76
14	93	100	136	209	172	387	163	188	153	93	62	76
15	91	95	131	188	174	387	156	197	143	93	64	76
16	87	100	140	180	180	363	150	200	143	91	58	72
17	95	104	153	174	185	336	148	191	136	89	58	70
18	104	122	158	166	250	306	148	191	131	89	58	78
19	100	143	158	166	387	281	150	197	126	83	58	97
20	100	133	158	163	371	261	161	197	128	91	59	85
21	100	124	163	153	351	234	177	218	117	102	62	80
22	100	117	174	148	325	228	200	250	115	85	74	82
23	112	108	169	146	310	215	228	261	122	82	72	76
24	108	106	163	146	306	203	288	288	143	80	80	74
25	104	108	150	146	303	194	295	328	126	76	78	72
26	106	108	148	143	295	185	271	367	115	74	87	72
27	104	110	143	161	274	177	254	375	126	74	76	72
28	102	110	128	172	264	172	231	375	126	72	72	74
29	136	115	126	174	---	166	218	387	126	69	72	74
30	119	115	124	177	---	295	218	408	136	66	72	74
31	108	---	119	169	---	347	---	399	---	67	72	---
TOTAL	3122	3228	4412	6039	6062	8551	6624	7890	5247	2939	2056	2243
MEAN	101	108	142	197	217	276	221	255	175	94.8	66.3	74.8
MAX	136	143	174	387	387	387	355	408	363	150	87	97
MIN	87	93	112	110	133	166	148	188	115	66	58	66
AC-FT	6190	6400	8750	12100	12020	16960	13140	15650	10410	5830	4080	4450

CAL YR 1982 TOTAL 80612 MEAN 221 MAX 1470 MIN 58 AC-FT 159900
WTR YR 1983 TOTAL 58473 MEAN 160 MAX 408 MIN 58 AC-FT 116000

BEST COPY AVAILABLE

13349210 PALOUSE RIVER BELOW SOUTH FORK, AT COLFAX, WA

LOCATION.--Lat 46°53'23", long 117°22'09", in NW¼SW¼ sec.11, T.16 N., R.43 E., Whitman County, Hydrologic Unit 17060108, on left bank at Colfax, 750 ft downstream from South Fork, 0.3 mi upstream from bridge on U.S. Highway 195, and at mile 89.5.

DRAINAGE AREA.--796 mi².

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to September 1975 (annual maximum only), October 1975 to current year.

REVISED RECORDS.--WSP 2134: 1967, 1968.

GAGE.--Water-stage recorder. Datum of gage is 1,932.22 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records fair. Small diversions for irrigation above station. Slight regulation by millpond and city of Moscow, Idaho, sewage disposal plant.

AVERAGE DISCHARGE.--17 years (water years 1964-72, 1976-83), 391 ft³/s, 283,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft³/s Jan. 16, 1974, gage height, 18.73 ft; minimum, 1.7 ft³/s Aug. 3, 23, 1966; minimum gage height, 0.88 ft Aug. 3, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 3, 1963, reached a stage of 16.49 ft, discharge, 14,500 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 6	2115	4,650	10.59	Mar. 5	0345	3,200	8.82
Feb. 18	1745	*6,960	*12.33	Mar. 30	0615	3,880	9.52

Minimum discharge, 15 ft³/s Sept. 9, gage height, 1.91 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	90	193	95	322	1350	1670	238	112	72	39	21
2	41	74	152	85	278	1390	1540	242	109	81	34	21
3	41	64	164	95	238	1220	1400	252	114	81	32	22
4	39	62	242	150	191	1500	1090	240	106	78	30	22
5	36	64	370	1770	175	2910	890	238	98	69	32	21
6	38	84	298	2900	171	2500	772	314	92	57	33	21
7	44	102	273	3060	195	2170	688	558	88	52	30	18
8	46	143	181	2420	177	1940	628	589	84	54	29	21
9	40	102	143	1660	208	1790	568	764	74	55	31	20
10	47	81	128	1010	400	1650	589	664	78	51	32	24
11	50	68	110	772	551	1910	537	604	92	48	37	35
12	43	62	100	583	696	2060	495	498	104	46	46	34
13	38	56	110	460	720	2150	447	431	104	51	37	51
14	37	47	120	367	660	2040	406	376	89	55	39	50
15	36	51	143	293	593	1460	373	358	82	61	39	37
16	36	56	419	258	1330	1180	344	379	77	85	28	31
17	36	53	612	258	1990	1040	322	358	77	82	27	28
18	42	88	450	228	4690	867	311	325	76	68	23	28
19	39	135	306	219	6130	748	301	298	74	56	21	32
20	39	224	238	222	3540	656	296	285	84	62	19	31
21	43	175	304	226	2530	593	296	261	73	82	19	27
22	47	135	628	213	2000	547	309	240	63	93	18	30
23	55	98	519	199	1730	586	314	228	67	117	21	29
24	53	76	296	213	1520	624	388	213	78	70	23	27
25	48	69	235	231	1390	530	516	197	68	60	25	26
26	73	65	167	280	1690	565	422	181	65	68	32	24
27	84	77	177	644	1410	688	358	171	67	60	34	24
28	73	90	145	648	1320	660	306	156	64	54	32	24
29	114	130	127	489	---	620	270	143	67	50	31	22
30	101	183	125	431	---	3230	245	130	78	43	22	24
31	90	---	108	397	---	2660	---	118	---	41	20	---
TOTAL	1588	2804	7581	20876	36845	43834	17091	10049	2504	2002	915	825
MEAN	51.2	93.5	245	673	1316	1414	570	324	83.5	64.6	29.5	27.5
MAX	114	224	628	3060	6130	3230	1670	764	114	117	46	51
MIN	36	47	100	85	171	530	245	118	63	41	18	18
AC-FT	3150	5560	15040	41410	73080	86940	33900	19930	4970	3970	1810	1640

CAL YR 1982 TOTAL 225934 MEAN 619 MAX 9370 MIN 12 AC-FT 448100
WTR YR 1983 TOTAL 146914 MEAN 403 MAX 6130 MIN 18 AC-FT 291400

13351000 PALOUSE RIVER AT HOOPER, WA

LOCATION.--Lat 46°45'31", long 118°08'52", in NE¼SE¼ sec.27, T.15 N., R.37 E., Whitman County, Hydrologic Unit 17060108, on left bank 150 ft downstream from bridge on State Highway 26 at Hooper, 0.3 mi upstream from Cow Creek, 3.5 mi downstream from right bank tributary, 6.0 mi downstream from Willow Creek, and at mile 19.6.

DRAINAGE AREA.--2,500 mi^2.

PERIOD OF RECORD.--April to August 1897 (gage heights only), September 1897 to December 1899, April 1900 to April 1907, June 1908 to July 1912, March 1913 to March 1916, February 1951 to current year. Prior to 1904 sometimes published as "near Hooper." Water temperatures October 1961 to September 1971. Suspended sediment October 1961 to September 1971. Chemical analyses, water years 1959-71, 1974-80.

REVISED RECORDS.--WSP 1287: 1897-1904, 1910(M), 1915-16(M). WSP 1447: 1910. WSP 1934: Drainage area. WSP 1447: 1906(M). WSP 1567: 1908-09(M).

GAGE.--Water-stage recorder. Datum of gage is 1,040.8 ft National Geodetic Vertical Datum of 1929. Apr. 1 to Aug. 31, 1897, nonrecording gage at site 2.5 mi upstream at different datum. Sept. 9, 1897, to March 1916, various nonrecording gages at site 1.5 mi upstream from present site at different datums. Feb. 8 to Mar. 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Records good. Diversions above station for irrigation and municiple use. Bonneville Power Administration satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1898-99, 1901-06, 1909-11, 1914-15, 1952-83), 618 ft^3/s, 447,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft^3/s Feb. 4, 1963, gage height, 19.13 ft, from rating curve extended above 18,000 ft^3/s on basis of slope-area measurement of peak flow; no flow part or all of each day June 25, 1910, Aug. 1-17, Aug. 28 to Sept. 4, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 7	0845	6,480	11.15	Mar. 14	0445	4,160	9.69
Feb. 19	0415	*7,600	*11.74	Mar. 30	1800	5,010	10.28
Mar. 5	1945	4,030	9.59				

Minimum discharge, 48 ft^3/s Aug. 22, 23, gage height, 3.34 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	159	300	220	810	2180	3170	584	262	172	92	61
2	88	153	339	190	730	2260	2510	552	242	188	82	59
3	84	149	318	240	668	2330	2530	528	235	186	78	56
4	84	139	327	324	596	2060	2150	520	228	188	76	56
5	87	135	417	1100	532	3290	1830	508	224	180	76	54
6	85	140	596	3850	492	3790	1600	520	215	170	71	54
7	82	146	540	5690	504	3360	1450	596	209	155	69	56
8	82	153	500	4270	520	3060	1330	835	196	140	64	54
9	84	188	385	3470	512	2820	1240	916	184	132	61	55
10	92	192	300	2300	556	2680	1160	1040	180	130	58	60
11	89	168	272	1780	865	2490	1170	958	182	130	60	70
12	88	153	267	1510	1070	3440	1080	865	190	121	60	73
13	92	144	272	1230	1250	3070	1010	753	200	121	61	77
14	89	139	285	1020	1280	3700	934	681	213	137	60	82
15	87	132	321	875	1180	2950	870	627	192	148	59	81
16	84	123	360	776	1180	2420	820	622	178	139	57	95
17	83	126	805	704	2310	2110	775	613	174	140	53	83
18	84	148	952	686	3820	1880	739	592	164	155	53	81
19	85	155	815	632	7190	1660	713	552	164	146	54	82
20	88	188	690	614	5620	1500	694	520	159	132	56	79
21	88	291	609	604	3990	1370	676	496	159	137	53	79
22	88	291	766	600	3210	1290	667	466	162	135	49	83
23	101	245	1130	568	2890	1230	681	438	159	139	50	81
24	108	192	967	556	2540	1300	708	428	170	140	57	77
25	112	162	717	576	2310	1270	775	392	178	137	68	78
26	113	155	600	618	2340	1140	886	372	172	118	67	77
27	116	166	492	704	2500	1210	795	360	159	108	61	72
28	135	190	480	1170	2130	1310	730	336	153	107	62	69
29	159	194	424	1100	---	1270	672	321	159	104	71	69
30	153	233	375	928	---	2900	627	306	162	98	65	70
31	174	---	310	865	---	4510	---	277	---	95	62	---
TOTAL	3069	5149	15931	39770	53595	71850	34992	17574	5624	4328	1965	2123
MEAN	99.0	172	514	1283	1914	2318	1166	567	187	140	63.4	70.8
MAX	174	291	1130	5690	7190	1510	3170	1040	262	188	92	95
MIN	82	123	267	190	492	1140	627	277	153	95	49	54
AC-FT	6090	10210	31600	78880	106300	142500	69410	34860	11160	8580	3900	4210

CAL YR 1982	TOTAL	342109	MEAN	937	MAX	12200	MIN	31	AC-FT	678600
WTR YR 1983	TOTAL	255970	MEAN	701	MAX	7190	MIN	49	AC-FT	507700

13353000 SNAKE RIVER BELOW ICE HARBOR DAM, WA

LOCATION.--Lat 46°14'53", long 118°52'43", in NE¼SE¼, sec.24, T.9 N., R.31 E., Walla Walla County, Hydrologic Unit 17060110, in powerhouse forebay pier P-1 on south side of Bay 1 at Ice Harbor Dam, 8.0 mi northeast of Burbank, and at mile 9.7.

DRAINAGE AREA.--106,500 mi², approximately.

PERIOD OF RECORD.--October 1907 to March 1917 (gage heights only October 1907 to August 1909), March 1962 to current year. Published as "at Burbank" prior to 1911 and as "near Burbank" 1912-17. Chemical analyses October 1965 to September 1969, October 1971 to September 1972. For records collected at site 7.5 mi downstream see station 13353200.

REVISED RECORDS.--WSP 1317: Drainage area.

GAGE.--Watt-hour meters on each turbine in Ice Harbor Dam powerhouse. Elevations are National Geodetic Vertical Datum of 1929. Oct. 2, 1907, to Mar. 31, 1917, nonrecording gage at site approximately 2 mi downstream at datum 300 ft higher. Mar. 23, 1962, to Sept. 30, 1968, water-stage recorder 1.0 mi downstream at National Geodetic Vertical Datum of 1929.

REMARKS.--Records computed from power output, flow over spillway, flow through fish ladder, and lockage records at Ice Harbor Dam. Diversions above station for irrigation of over 4,090,000 acres. Flow regulated by Lake Sacajawea and many upstream storage reservoirs and powerplants.

COOPERATION.--Records furnished by U.S. Corps of Engineers. Records not reviewed.

AVERAGE DISCHARGE.--28 years (water years 1910-16, 1963-83), 55,990 ft³/s, 40,565,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 312,000 ft³/s June 19, 1974; no flow momentarily Aug. 27, 1965 (result of testing at Ice Harbor Dam).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1948, reached an elevation of 361.9 ft at a site 0.7 mi downstream, from information by U.S. Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum hourly discharge, 204,000 ft³/s May 30; maximum forebay elevation, 440.10 ft May 27; minimum hourly discharge, 300 ft³/s Feb. 1; minimum forebay elevation, 436.60 ft July 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25900	52400	53100	40400	49300	79300	102000	96100	196000	90800	38000	24800
2	23500	50900	54600	41100	58600	95500	94000	120000	177000	95900	20100	25600
3	29000	34300	50300	51500	61800	91500	89300	97900	174000	105000	38500	32900
4	33900	28100	46100	45300	61300	92100	92300	115000	160000	105000	35000	24000
5	32600	32000	32500	49200	27600	105000	93200	111000	163000	115000	36800	22300
6	39700	33900	48000	64900	30900	111000	92100	108000	158000	96200	18200	18300
7	33500	32700	50900	63400	47300	94200	70500	116000	155000	67700	15800	26100
8	34400	46000	54300	76600	43900	105000	70600	120000	158000	87500	27400	39500
9	32400	36000	47700	85200	40800	109000	72600	115000	153000	70900	25100	45200
10	35600	39300	41400	84300	43500	107000	79700	113000	161000	65000	26400	46200
11	43500	37100	50700	67100	47400	121000	80300	115000	161000	74400	31200	29800
12	29000	35400	50200	69500	40700	138000	73500	108000	155000	81600	18100	31200
13	32800	35400	49400	69500	38400	120000	80000	111000	153000	78300	23500	29800
14	31800	32000	38900	66300	54500	123000	77300	99400	141000	74500	18600	31900
15	35800	34900	49300	40500	40700	129000	65800	105000	115000	74900	36200	38500
16	30600	36800	29900	38700	56600	125000	60200	91200	129000	49600	30500	30400
17	32000	40100	55400	68900	65200	124000	53200	95100	132000	68600	29000	36700
18	40600	43300	42400	56200	64800	116000	54400	98100	123000	65700	34000	22900
19	27700	54700	54400	57900	82800	106000	58200	96000	128000	55800	44900	31600
20	38100	38400	52300	52000	82600	101000	54800	95800	130000	57800	47400	35000
21	40500	31900	44800	43500	88700	101000	47900	93800	117000	44900	22500	35000
22	31700	47100	50200	48800	83000	106000	40800	97000	103000	39300	17800	37200
23	22400	46000	66900	45100	72900	101000	75500	107000	91600	37300	19800	29700
24	28900	43200	66800	52600	81400	89300	104000	119000	92200	31400	29700	38800
25	36000	30200	47700	42700	84500	76100	109000	136000	68100	38200	27700	32300
26	44200	37400	33100	63500	85600	78800	119000	151000	69800	38800	43900	34400
27	39300	28700	41700	52600	94300	87900	111000	182000	79400	32700	46700	31900
28	39800	36800	44600	56200	95400	81200	104000	182000	87900	42600	44500	33500
29	47800	37500	47800	51200	---	80500	94800	198000	103000	32100	28400	34200
30	44900	41000	52400	54100	---	78900	102000	190000	90000	29700	44100	33500
31	44400	---	45500	55800	---	74400	---	191000	---	23700	22500	---
TOTAL	1082300	1153500	1493300	1754600	1724500	3147700	2422000	3773400	3924000	1970900	942300	963200
MEAN	34910	38450	48170	56600	61590	101500	80730	121700	130800	63580	30400	32110
MAX	47800	54700	66900	85200	95400	138000	119000	198000	196000	115000	47400	46200
MIN	22400	28100	29900	38700	27600	74400	40800	91200	68100	23700	15800	18300
AC-FT	2147000	2288000	2962000	3480000	3421000	6243000	4804000	7485000	7783000	3909000	1869000	1911000

CAL YR 1982 TOTAL 26515600 MEAN 72650 MAX 203000 MIN 11700 AC-FT 52594000
WTR YR 1983 TOTAL 24351700 MEAN 66720 MAX 198000 MIN 15800 AC-FT 48302000

AVAILABLE

13353200 SNAKE RIVER AT BURBANK, WA

(National stream quality accounting network station)

LOCATION.--Lat 48°12'59", long 119°01'22", in NE¼SW¼ sec.35, T.9 N., R.30 E., Franklin County, Hydrologic Unit 17060110, at U.S. Highway 395/410 bridge at Burbank, 2.2 mi upstream from mouth, and 7.5 mi downstream from Ice Harbor Dam.

DRAINAGE AREA.--108,800 mi².

PERIOD OF RECORD.--Water years 1960-69, 1972 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1973 to September 1979.
WATER TEMPERATURES: April 1973 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)
OCT , 1982												
28...	1105	48800	310	8.0	13.5	3.4	8.7	84	K4	59	110	0
FEB , 1983												
02...	1440	80200	293	7.3	3.0	6.3	14.2	107	<1	K15	100	0
MAY												
03...	1400	96900	160	8.1	11.5	9.3	13.2	122	K2	28	60	0
AUG												
10...	1115	28100	178	7.4	21.0	3.0	7.5	86	K2	35	64	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1982											
28...	28	9.2	23	31	1	3.0	109	30	16	.40	20
FEB , 1983											
02...	27	8.6	18	27	.8	2.6	103	25	11	.40	23
MAY											
03...	16	4.8	10	26	.6	1.7	53	13	5.5	.20	18
AUG											
10...	17	5.2	10	25	.6	1.7	67	15	5.6	.20	13

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1982											
28...	188	200	.26	24800	--	.52	.090	4.0	.070	.040	.040
FEB , 1983											
02...	171	180	.23	37000	11	.75	.110	.60	.090	.060	<.010
MAY											
03...	109	110	.15	28500	6	.19	<.060	.80	.050	.020	.010
AUG											
10...	101	110	.14	7660	18	.16	.100	1.2	.060	.040	.010

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

13353200 SNAKE RIVER AT BURBANK, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON. DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)
OCT , 1982											
28...	10	4	34	<.5	<1	<1	<3	1	17	3	20
FEB , 1983											
02...	120	3	37	<.5	<1	<1	<3	1	58	<1	21
MAY											
03...	110	2	22	<.5	<1	<1	<3	2	78	<1	18
AUG											
10...	30	2	28	<.5	<1	<1	<3	2	37	<1	17

DATE	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDIMENT, SUS-PENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1982											
28...	3	<.1	<10	1	1	<1	170	<6	<3	3	395
FEB , 1983											
02...	4	<.1	<10	<1	1	<1	150	<6	4	14	3030
MAY											
03...	3	.1	<10	6	<1	<1	95	<6	7	14	3660
AUG											
10...	5	<.1	<10	<1	<1	<1	110	<6	<3	5	379

DATE	TIME	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS-SOLVED (UG/L AS U)
OCT , 1982									
28...	1105	<6.5	<.4	3.2	.6	3.1	.6	05	2.6
MAY , 1983									
03...	1400	<3.5	1.1	2.6	.7	2.5	.7	.06	1.6

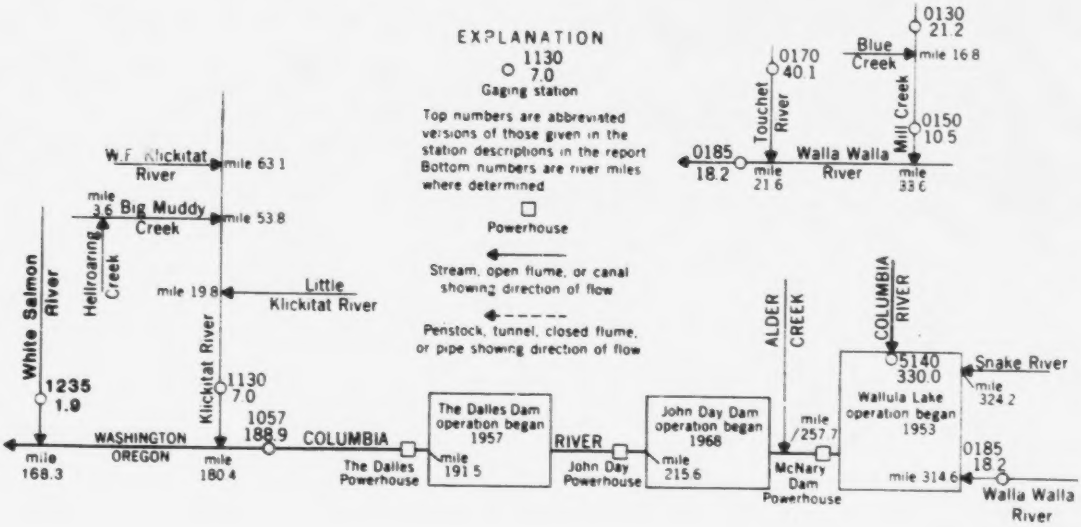
EXPLANATION
1130
7.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
W.F. Klickitat River
mile 63.1
mile 3.6
Big Muddy Creek
mile 53.8
White Salmon River
Hellroaring Creek
mile 19.8
Little Klickitat River
Klickitat River
1235
1.9
1130
7.0
1057
188.9
WASHINGTON
OREGON
mile 168.3
mile 180.4
COLUMBIA
RIVER
The Dalles Powerhouse
The Dalles Dam operation began 1957
mile 191.5
John Day Powerhouse
John Day Dam operation began 1968
mile 215.6
ALDER CREEK
mile 257.7
McNary Dam Powerhouse
COLUMBIA RIVER
5140
330.0
Wallula Lake operation began 1953
Snake River
mile 324.2
0185
18.2
mile 314.6
Walla Walla River
0130
21.2
Blue Creek
mile 16.8
0170
40.1
Touchet River
Mill Creek
0150
10.5
0185
18.2
Walla Walla River
mile 21.6
mile 33.6

Figure 31.—Gaging stations in Columbia River basin between Wallula Lake and White Salmon River.

14013000 MILL CREEK NEAR WALLA WALLA, WA

LOCATION.--Lat 46°00'29", long 118°07'03", in SW¼SW¼ sec.7, T.6 N., R.38 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.1 mi downstream from Railroad Canyon, 4.0 mi downstream from city of Walla Walla diversion dam, 4.4 mi upstream from Blue Creek, 11.5 mi southeast of Walla Walla, and at mile 21.2.

DRAINAGE AREA.--59.6 mi^2.

PERIOD OF RECORD.--August 1913 to September 1917, April to September 1938, October 1939 to September 1976, October 1979 to current year. Maximum discharge and occasional discharge measurements 1977-79.

REVISED RECORDS.--WSP 1398: 1946-48(M), 1950 (M). WSP 1935: 1959, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,995.85 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Corps of Engineers). Prior to Oct. 1, 1938, nonrecording gages at about same site at different datums.

REMARKS.--Records good. No regulation. City of Walla Walla diverts about 22 ft^3/s 4.0 mi above station for municipal use.

AVERAGE DISCHARGE.--45 years (water years 1914-17, 1940-76, 1980-83), 98.4 ft^3/s, 71,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,240 ft^3/s Dec. 23, 1964, gage height, 19.26 ft; minimum daily, 9.5 ft^3/s Dec. 9, 10, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 31 or April 1, 1931, reached a discharge of about 11,000 ft^3/s, based on slope-area measurement about 900 ft upstream at old city of Walla Walla diversion dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft^3/s, Jan. 6, gage height, 17.26 ft, no peak above base of 700 ft^3/s; minimum, 18 ft^3/s Sept. 5-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	56	105	45	93	107	317	89	71	38	26	20
2	28	51	95	44	83	110	270	85	64	43	25	20
3	34	48	168	44	76	112	226	81	61	37	25	19
4	29	45	192	107	71	168	190	81	56	34	25	19
5	27	58	157	249	66	214	163	89	53	33	24	19
6	27	107	157	709	62	223	142	91	51	34	24	19
7	31	87	134	790	62	204	125	95	49	33	23	19
8	31	76	112	500	59	178	112	123	49	33	23	19
9	29	68	93	313	91	170	103	149	48	32	24	19
10	28	61	81	217	114	176	95	168	52	31	24	22
11	27	53	73	163	129	184	87	163	48	30	24	26
12	26	48	69	137	168	187	80	144	45	30	23	21
13	26	45	69	118	170	229	73	125	42	30	23	20
14	33	44	66	105	155	263	68	118	39	39	22	20
15	28	43	97	95	137	229	62	134	40	32	22	20
16	29	43	155	87	190	187	61	129	38	30	21	19
17	32	61	168	81	223	160	61	123	38	30	20	19
18	29	66	142	78	380	137	64	125	37	29	38	23
19	27	87	116	78	472	114	69	116	38	28	36	28
20	26	93	105	78	336	101	78	110	38	32	21	22
21	26	85	105	75	249	93	93	112	35	29	20	22
22	26	75	103	69	223	89	93	105	34	28	21	21
23	29	66	99	68	217	93	101	103	38	27	23	21
24	29	59	85	76	192	89	120	101	37	27	22	21
25	28	53	76	78	165	87	105	99	33	27	21	20
26	40	51	71	114	149	83	93	97	33	27	21	20
27	37	49	62	170	129	87	85	91	35	27	20	20
28	37	71	58	152	116	85	81	87	34	27	20	21
29	99	107	53	129	---	99	80	89	37	26	20	21
30	71	125	49	116	---	491	80	85	34	25	20	21
31	59	---	47	101	---	436	---	78	---	26	20	---
TOTAL	1055	1981	3162	5186	4577	5185	3377	3385	1307	954	721	621
MEAN	34.0	66.0	102	167	163	167	113	109	43.6	30.8	23.3	20.7
MAX	99	125	192	790	472	491	317	168	71	43	38	28
MIN	26	43	47	44	59	83	61	78	33	25	20	19
AC-FT	2090	3930	6270	10290	9080	10280	6700	6710	2590	1890	1430	1230

CAL YR 1982 TOTAL 38259 MEAN 105 MAX 1110 MIN 15 AC-FT 75890
WTR YR 1983 TOTAL 31511 MEAN 86.3 MAX 790 MIN 19 AC-FT 62500

14015000 MILL CREEK AT WALLA WALLA, WA

LOCATION.--Lat 46°04'35", long 118°16'21", in NE¼NW¼ sec.23, T.7 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 200 ft downstream from diversion dam, 1.5 mi east of Walla Walla, and at mile 10.5.

DRAINAGE AREA.--95.7 mi².

PERIOD OF RECORD.--April 1941 to current year.

REVISED RECORDS.--WSP 1288: Drainage area. WSP 1348: 1943, 1945-46.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,165.49 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Corps of Engineers). April 1941 to June 11, 1941, nonrecording gage, and June 11, 1941, to Jan. 22, 1957, water-stage recorder, at sites 0.8 mi downstream at different datum.

REMARKS.--Records good except those below 20 ft³/s, which are poor. Some regulation at diversion dam 200 ft upstream from station where water is diverted into Yellowhawk and Garrison Creeks for stock and irrigation. Since Nov. 19, 1941, water has been diverted 1.0 mi upstream into Mill Creek Reservoir for flood control with release of stored water after flood into Russell Creek, and is also diverted as required to replenish losses from seepage and evaporation from small recreation pool maintained in the reservoir. City of Walla Walla diverts water for municipal supply about 11 mi upstream. Other small diversions above station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s Dec. 28, 1945, gage height, 4.0 ft, site and datum then in use; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 31, April 1, 1931, discharge not determined, was greatest since at least 1913. Discharge about 11,000 ft³/s, based on a slope-area measurement made at old city of Walla Walla diversion dam 10.8 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,320 ft³/s Jan. 6, gage height, 4.51 ft; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	26	111	44	81	112	456	67	37	1.6	.00	.00
2	8.0	20	93	41	74	97	400	73	28	8.0	.00	.00
3	9.0	15	181	38	67	92	332	65	23	1.2	.00	.00
4	3.1	13	244	60	61	233	276	64	22	.00	.00	.00
5	8.1	18	206	270	55	362	228	72	20	.00	.00	.00
6	7.0	92	207	748	52	364	190	79	16	.00	.00	.00
7	12	93	171	1050	54	320	160	68	3.4	.00	.00	.00
8	14	69	136	695	50	273	138	108	.00	.00	.00	.00
9	14	52	109	442	94	258	126	139	.00	.00	.00	.00
10	14	41	84	296	144	218	113	189	10	.00	.00	.00
11	14	35	74	215	165	230	96	174	8.5	.00	.00	.00
12	6.9	27	70	172	207	237	81	142	3.4	.00	.00	.14
13	3.6	22	67	138	224	282	71	106	1.0	.00	.00	.09
14	1.6	21	52	115	207	338	85	94	.00	3.2	.00	.02
15	.00	21	88	104	205	325	66	113	.00	.00	.00	.00
16	.00	20	206	96	253	277	63	107	.00	.00	.00	.00
17	.00	21	216	84	296	229	61	104	.00	.00	.00	.00
18	3.5	29	181	78	551	190	60	109	.00	.00	.00	.18
19	4.6	49	142	78	761	158	54	97	.00	.00	.00	10
20	3.1	76	117	78	525	139	46	90	.00	.00	.00	3.4
21	3.4	76	101	72	390	98	41	89	.00	.00	.00	1.7
22	1.4	71	93	69	321	90	57	85	.00	.00	.00	1.3
23	.10	64	92	67	287	110	88	77	.00	.00	.00	1.1
24	.10	48	92	79	260	103	111	70	.42	.00	.00	1.3
25	.22	40	82	85	246	97	90	58	.00	.00	.00	2.2
26	6.4	38	75	114	208	98	81	53	.00	.00	.00	1.3
27	4.6	37	67	206	174	105	74	52	.00	.00	.00	1.6
28	.18	41	58	184	151	103	60	49	.00	.00	.00	2.2
29	76	80	52	154	---	99	63	47	.00	.00	.00	2.4
30	54	130	49	134	---	615	64	47	.00	.00	.00	3.1
31	36	---	47	101	---	643	---	46	---	.00	.00	---
TOTAL	321.40	1387	3563	6107	6163	6895	3831	2733	172.72	14.00	.00	32.03
MEAN	10.4	46.2	115	197	220	222	128	88.2	5.76	.45	.00	1.07
MAX	76	130	244	1050	761	643	456	189	37	8.0	.00	10
MIN	.00	13	47	38	50	90	41	46	.00	.00	.00	.00
AC-FT	637	2750	7070	12110	12220	13680	7600	5420	343	28	.00	64

CAL YR 1982 TOTAL 45182.83 MEAN 124 MAX 1440 MIN .00 AC-FT 89620
WTR YR 1983 TOTAL 31219.15 MEAN 85.5 MAX 1050 MIN .00 AC-FT 61920

14017000 TOUCHET RIVER AT BOLLES, WA

LOCATION.--Lat 46°16'28", long 118°13'13", on line between secs.7 and 8, T.9 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, on right bank just downstream from bridge on State Highway 124, 0.4 mi southeast of Bolles, 2.9 mi downstream from Coppei Creek, and at mile 40.1.

DRAINAGE AREA.--361 mi^2.

PERIOD OF RECORD.--February 1924 to October 1929, April 1951 to current year. Monthly discharge only for February and March 1929, published in WSP 1318.

REVISED RECORDS.--WSP 1448: 1952-53(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,150 ft, from topographic map. Prior to Oct. 5, 1929, water-stage recorder at site 0.5 mi upstream at different datum. Apr. 1 to May 6, 1951, October 1968 to September 1974, nonrecording gage.

REMARKS.--Records good. Diurnal fluctuation and some regulation at low flow caused by operation of flour mill at Waitsburg 3 mi upstream. Numerous small diversions for municipal, domestic, and irrigation use.

AVERAGE DISCHARGE.--37 years (water years 1925-29, 1952-83), 233 ft^3/s, 168,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,350 ft^3/s Dec. 23, 1964, gage height, 14.06 ft, from rating curve extended above 3,800 ft^3/s on basis of slope-area measurement of peak flow; minimum, 1.4 ft^3/s July 30, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 6	2215	2,160	5.89	Mar. 30	0800	*2,240	*5.96
Feb. 18	2030	2,210	5.93				

Minimum discharge, 29 ft^3/s Aug. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	96	197	125	245	364	864	215	177	81	39	38
2	62	90	180	117	225	433	840	215	157	101	38	41
3	67	87	276	133	206	376	667	203	143	90	36	38
4	69	81	368	215	188	695	565	197	130	77	36	36
5	67	83	336	520	180	707	485	200	123	69	35	36
6	64	194	343	1110	183	672	433	215	115	66	35	36
7	66	152	298	1490	185	612	385	212	103	66	34	35
8	66	128	259	1070	174	550	347	291	99	67	35	36
9	66	115	228	782	231	505	324	305	94	64	36	38
10	64	103	200	591	291	480	305	324	105	60	36	42
11	64	99	180	466	347	601	276	305	115	59	38	60
12	62	92	168	389	428	565	262	280	103	57	38	52
13	62	94	180	340	466	736	245	259	99	55	35	45
14	60	85	168	294	442	770	225	241	87	71	34	44
15	60	83	245	266	402	678	209	276	81	66	34	42
16	60	83	402	252	510	591	197	266	79	60	32	41
17	69	90	424	235	591	520	191	248	75	55	31	41
18	79	123	372	218	1330	451	191	238	73	53	32	45
19	69	191	320	225	1400	389	191	231	73	48	34	71
20	66	200	276	231	1030	347	200	222	73	53	35	62
21	66	180	283	215	828	313	218	222	69	62	34	53
22	66	154	291	200	724	294	235	218	69	50	36	52
23	73	141	262	200	623	291	241	215	75	47	42	52
24	77	125	235	215	565	266	309	218	92	48	47	50
25	71	117	206	212	505	248	273	218	77	48	55	50
26	83	115	200	248	490	228	252	222	71	45	52	48
27	87	110	177	343	424	231	235	215	75	44	44	47
28	77	125	168	316	398	218	218	209	79	45	42	47
29	163	177	154	298	---	231	206	206	81	44	41	48
30	135	212	141	287	---	1520	209	197	81	41	38	48
31	112	---	135	262	---	1190	---	188	---	41	36	---
TOTAL	2316	3725	7672	11865	13611	16072	9798	7271	2873	1833	1170	1374
MEAN	74.7	124	247	383	486	518	327	235	95.8	59.1	37.7	45.8
MAX	163	212	424	1490	1400	1520	864	324	177	101	55	71
MIN	60	81	135	117	174	218	191	188	69	41	31	35
AC-FT	4590	7390	15220	23530	27000	31880	19430	14420	5700	3640	2320	2730

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CAL YR 1982    TOTAL    129631    MEAN    355    MAX    4390    MIN    27    AC-FT    257100
WTR YR 1983    TOTAL     79580    MEAN    218    MAX    1520    MIN    31    AC-FT    157800
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14018500 WALLA WALLA RIVER NEAR TOUCHET, WA

LOCATION.--Lat 46°01'40", long 118°43'43", in NW¼SE¼ sec.6, T.6 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.8 mi upstream from Gardena Creek, 2.8 mi southwest of Touchet, 3.4 mi downstream from Touchet River, and at mile 18.2.

DRAINAGE AREA.--1,657 mi².

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 405 ft, from topographic map. Prior to Nov. 27, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good. Many diversions above station for irrigation.

AVERAGE DISCHARGE.--32 years, 597 ft³/s, 432,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft³/s Dec. 22, 1964, gage height, 18.90 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; no flow July 30 to Aug. 8, Aug. 12, 13, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 7	0745	5,620	11.05	Mar. 30	1915	4,710	10.32
Feb. 19	0615	*5,640	*11.07				

Minimum discharge, 13 ft³/s Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	296	691	477	807	1190	2600	517	214	107	36	31
2	77	245	638	443	760	1280	2510	622	181	135	33	38
3	74	214	815	446	711	1240	2050	543	170	156	28	42
4	82	193	1170	474	671	2350	1750	495	142	131	25	40
5	79	185	1140	1260	630	2720	1480	495	128	112	24	38
6	64	257	1160	2480	603	2380	1280	614	115	95	23	37
7	55	467	1130	5060	622	2120	1140	565	89	85	21	32
8	58	373	969	3920	599	1910	1020	719	77	85	25	28
9	63	323	869	2700	691	1770	909	864	71	85	26	26
10	58	278	764	1970	974	1650	860	1030	77	85	27	26
11	56	250	695	1540	1040	1910	781	1010	154	77	27	45
12	54	235	646	1280	1280	2020	715	923	142	68	27	61
13	47	224	667	1110	1400	2060	663	802	133	59	24	58
14	46	219	667	988	1390	2320	618	695	118	78	22	48
15	44	212	842	900	1340	2090	565	756	100	102	18	44
16	46	233	1690	837	1480	1810	532	798	89	89	15	46
17	43	245	1650	794	1670	1590	506	699	85	82	15	42
18	51	299	1420	760	2960	1390	495	699	82	79	15	42
19	69	394	1150	764	4850	1200	484	691	83	66	17	53
20	68	517	983	851	3250	1070	481	626	83	61	23	70
21	68	528	946	824	2480	974	481	576	83	66	24	65
22	64	488	983	789	2110	873	528	561	77	71	21	56
23	78	450	914	751	1970	923	580	517	79	55	22	56
24	91	423	837	777	1840	887	900	470	89	51	32	63
25	89	385	756	837	1690	824	781	426	104	51	39	62
26	95	367	715	891	1550	781	683	397	86	43	44	64
27	126	355	667	1130	1370	777	614	355	81	43	45	56
28	121	361	595	1130	1290	785	557	301	89	40	40	54
29	367	477	561	1030	---	756	525	293	92	43	36	55
30	568	695	539	969	---	2640	514	288	102	38	35	58
31	376	---	506	891	---	3540	---	265	---	35	33	---
TOTAL	3271	10188	27775	39073	42028	49830	27602	18612	3215	2373	842	1436
MEAN	106	340	896	1260	1501	1607	920	600	107	76.5	27.2	47.9
MAX	568	695	1690	5060	4850	3540	2600	1030	214	156	45	70
MIN	43	185	506	443	599	756	481	265	71	35	15	26
AC-FT	6490	20210	55090	77500	83360	98840	54750	36920	6380	4710	1670	2850

CAL YR 1962 TOTAL 306145 MEAN 839 MAX 7950 MIN 15 AC-FT 607200
WTR YR 1983 TOTAL 226245 MEAN 620 MAX 5060 MIN 15 AC-FT 448800

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW¼SW¼ sec.34, T.2 N., R.13 E., Wasco County, Hydrologic Unit 17070105, Corps of Engineers land, on left bank 0.3 mi downstream from Mill Creek, 2.6 mi downstream from The Dalles Dam, and at mile 188.9.

DRAINAGE AREA.--237,000 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1857 to September 1877 (annual maximum only, at Lower Cascades Landing, published in WSP 1318), June 1878 to current year. Published as "near The Dalles" 1936-56.

REVISED RECORDS.--WSP 534: 1920(m). WSP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Mar. 16, 1957. Mar. 16, 1957, to Sept 30, 1968, water-stage recorder at site 0.4 mi upstream at same datum.

REMARKS.--Water-discharge records excellent. Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant and gates at The Dalles Dam. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--105 years, 193,600 ft³/s, 140,300,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft³/s June 6, 1894, elevation, 106.5 ft; minimum (since 1878), 12,100 ft³/s Apr. 16, 1968 (due to closure of John Day dam, recorded by AVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 426,000 ft³/s June 1; maximum elevation, 84.2 ft June 2; minimum daily discharge, 85,000 ft³/s Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112000	156000	162000	165000	205000	317000	342000	292000	426000	203000	197000	182000
2	101000	188000	193000	137000	234000	338000	329000	321000	423000	185000	199000	137000
3	85000	165000	167000	181000	242000	344000	294000	305000	407000	196000	197000	131000
4	98900	151000	132000	168000	258000	366000	275000	312000	381000	214000	205000	116000
5	110000	155000	112000	177000	198000	355000	295000	297000	365000	197000	191000	101000
6	121000	143000	145000	231000	170000	323000	296000	316000	366000	221000	185000	111000
7	126000	124000	171000	237000	224000	348000	286000	335000	363000	240000	196000	172000
8	127000	156000	189000	163000	226000	368000	242000	335000	348000	245000	179000	129000
9	110000	162000	187000	203000	238000	353000	215000	314000	350000	185000	173000	104000
10	96300	159000	173000	153000	251000	336000	250000	343000	336000	147000	179000	138000
11	124000	157000	159000	182000	234000	334000	258000	353000	340000	181000	175000	126000
12	122000	154000	148000	175000	201000	321000	267000	313000	341000	218000	179000	98500
13	127000	145000	147000	229000	167000	345000	284000	321000	323000	225000	172000	102000
14	138000	125000	164000	241000	195000	364000	270000	294000	310000	211000	151000	120000
15	139000	149000	141000	214000	195000	364000	250000	287000	258000	216000	158000	120000
16	118000	163000	157000	179000	228000	369000	246000	289000	265000	256000	154000	110000
17	124000	153000	156000	202000	209000	386000	225000	256000	286000	221000	175000	150000
18	146000	136000	142000	229000	212000	390000	243000	286000	251000	227000	179000	100000
19	158000	139000	141000	225000	233000	386000	241000	270000	235000	225000	191000	112000
20	148000	132000	179000	216000	264000	371000	217000	270000	243000	221000	207000	136000
21	142000	140000	188000	209000	274000	354000	196000	256000	255000	224000	166000	121000
22	127000	157000	164000	185000	280000	342000	214000	268000	247000	217000	177000	132000
23	110000	162000	161000	160000	287000	338000	261000	280000	248000	193000	130000	134000
24	98200	165000	136000	201000	290000	338000	277000	312000	234000	179000	144000	109000
25	115000	123000	147000	195000	267000	340000	339000	331000	194000	194000	133000	98200
26	137000	153000	117000	191000	284000	287000	350000	363000	197000	196000	136000	100000
27	145000	141000	141000	208000	266000	288000	323000	395000	221000	238000	131000	117000
28	158000	128000	153000	212000	314000	326000	337000	404000	220000	213000	115000	130000
29	168000	152000	166000	175000	---	346000	316000	413000	203000	225000	113000	121000
30	169000	154000	163000	138000	---	336000	305000	419000	204000	215000	129000	116000
31	165000	---	165000	188000	---	323000	---	421000	---	212000	155000	---
TOTAL	3965400	4487000	4866000	5969000	6646000	10696000	8243000	9971000	8842000	6540000	5171000	3673700
MEAN	127900	149600	157000	192500	237400	345000	274800	321600	294700	211000	166800	122500
MAX	169000	188000	193000	241000	314000	390000	350000	421000	426000	256000	207000	182000
MIN	85000	123000	112000	137000	167000	287000	196000	256000	194000	147000	113000	98200
AC-FT	7865000	8900000	9652000	11840000	13182000	21216000	16350000	19777000	17538000	12972000	10257000	7287000

CAL YR 1982 TOTAL 84250500 MEAN 230800 MAX 443000 MIN 85000 AC-FT 167111000
WTR YR 1983 TOTAL 79070100 MEAN 216500 MAX 426000 MIN 85000 AC-FT 156836000

NOTE.--No velocity-index record July 1 to Aug. 18.

14105700 COLUMBIA RIVER AT THE DALLES, OR--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at The Dalles Dam, 3.2 mi upstream from discharge station.

PERIOD OF RECORD.--Water years 1951 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1950 to current year.
WATER TEMPERATURES: December 1950 to September 1969, October 1973 to September 1976.

REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 324 micromhos Dec. 7, 1955; minimum daily, 95 micromhos June 8, 1972.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 230 micromhos Jan. 18, 19; minimum daily, 110 micromhos June 9, 10.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	174	192	208	---	198	160	181	163	131	139	144
2	147	170	193	208	184	193	161	186	155	134	138	147
3	149	172	---	207	182	193	159	177	146	130	137	146
4	149	173	191	207	187	194	160	177	137	129	134	146
5	150	174	189	216	185	192	159	174	128	129	136	---
6	152	183	---	223	185	185	161	171	118	131	135	145
7	154	185	---	179	186	175	163	164	114	132	134	146
8	159	184	---	200	191	175	165	163	112	134	134	154
9	159	190	---	181	193	174	165	159	110	133	134	150
10	160	184	183	199	193	175	167	158	110	134	134	154
11	161	189	187	198	193	178	166	158	111	135	134	159
12	163	190	189	195	191	---	168	161	114	135	134	163
13	166	193	191	193	186	182	168	163	117	134	140	160
14	167	192	192	193	181	184	169	165	119	134	138	158
15	170	187	201	196	181	183	171	166	121	132	141	159
16	172	180	208	201	182	185	171	163	123	131	138	155
17	179	178	209	212	183	188	171	162	125	131	138	152
18	170	181	210	230	183	183	173	159	127	130	139	153
19	168	181	207	230	177	180	170	159	128	131	139	154
20	169	184	202	219	180	179	171	159	130	134	140	156
21	173	183	198	210	182	174	185	161	129	132	140	159
22	169	188	193	203	182	175	169	160	130	133	141	159
23	170	---	190	199	180	175	169	161	127	135	143	164
24	169	---	192	194	185	174	168	160	125	135	142	165
25	171	178	197	191	189	171	169	160	125	136	144	168
26	173	183	198	190	189	168	171	160	125	135	144	169
27	174	181	198	195	199	168	173	162	127	135	145	173
28	172	182	199	195	203	167	169	162	128	136	144	171
29	169	182	200	197	---	166	174	162	129	136	146	170
30	172	184	201	189	---	163	176	165	130	138	144	169
31	174	---	207	185	---	---	---	165	---	138	145	---
MEAN	164	182	197	201	186	179	168	165	126	133	139	158

14113000 KLICKITAT RIVER NEAR PITT, WA
(National stream quality accounting network station)

LOCATION.--Lat 45°45'24", long 121°12'32", in SW¼ sec.8, T.3 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, on left bank 2.8 mi south of Pitt, 4.8 mi southwest of Klickitat, 5.3 mi upstream from Silvias Creek, and at mile 7.0.

DRAINAGE AREA.--1,297 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1909 to January 1912, October 1928 to current year. Published as "at Klickitat" 1909-12 and as "at Pitt" 1928-35.

REVISED RECORDS.--WSP 1348: 1910(M), 1929-33(M), 1934, 1935-38(M), 1940(M), 1942-43(M), 1946(M), 1948(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.9 ft National Geodetic Vertical Datum of 1929 (river-profile survey). July 3, 1909, to Jan. 31, 1912, nonrecording gage at site 7 mi upstream at different datum. Oct. 1, 1928, to Sept. 30, 1935, nonrecording gage at site 3.5 mi upstream at different datum.

REMARKS.--Water-discharge records excellent. Several small diversions above station for irrigation of about 7,500 acres, mostly in vicinity of Glenwood. The largest of these is Hellroaring Irrigation Canal with a maximum flow of 74.5 ft³/s Aug. 13, 1974, which at times diverts the entire flow of Hellroaring Creek (tributary to Big Muddy Creek). No regulation.

AVERAGE DISCHARGE.--57 years (water years 1910-11, 1929-83), 1,625 ft³/s, 1,177,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Jan. 15, 1974, gage height, 17.12 ft from high-water mark in well, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement at gage height 14.34 ft; minimum, 412 ft³/s Jan. 16, 1979, gage height, 3.81 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 6	1700	7,840	8.74	Mar. 30	0430	*14,300	*10.96
Feb. 18	1330	13,600	10.76				

Minimum discharge, 791 ft³/s Nov. 15, gage height, 4.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	844	966	1020	1200	2470	4270	6560	2860	4280	1720	1320	1200
2	844	941	1020	1200	2340	4070	6340	2950	3890	1800	1300	1130
3	844	916	1330	1200	2210	3840	5190	2930	3550	1710	1240	1070
4	844	908	2300	1580	2090	3670	4430	2980	3230	1630	1200	1040
5	829	949	1910	3490	2000	3530	4030	3330	3050	1630	1180	999
6	821	966	1840	6580	2000	3580	3770	3390	2990	1660	1190	991
7	924	932	1580	6420	1940	4140	3570	3330	2980	1610	1190	982
8	852	916	1390	7050	1920	4720	3410	3190	3020	1530	1180	974
9	852	892	1320	5740	1970	6910	3260	2960	3050	1460	1180	957
10	844	876	1230	4660	2140	9310	3130	2810	2980	1430	1170	966
11	829	860	1180	4070	3490	8380	2980	2690	2930	1440	1190	1110
12	829	844	1170	3580	3720	7610	2820	2640	2680	1540	1120	1030
13	821	844	1170	3230	3580	8560	2690	2640	2500	1800	1090	991
14	813	829	1210	2950	3220	7680	2580	2680	2380	2090	1090	999
15	813	806	1790	2740	3330	6400	2480	2710	2350	1720	1080	982
16	813	860	2930	2620	3990	5660	2430	2640	2260	1550	1060	974
17	821	1030	2930	2530	7240	5070	2440	2680	2210	1460	1040	957
18	829	1290	2470	2460	11600	4560	2530	2740	2230	1440	1050	974
19	813	1220	2240	2530	8630	4160	2650	2860	2140	1430	1040	1030
20	806	1110	2230	2390	6600	3840	2820	3020	2040	1500	1030	974
21	821	1050	2310	2220	5700	3600	2930	3360	1960	1400	1010	949
22	1080	982	2420	2130	6210	3470	3020	3550	1890	1160	1010	932
23	1180	908	2090	2140	5970	3370	3040	3770	1950	1400	1030	932
24	991	884	1810	2400	5700	3200	3110	3990	1800	1420	999	932
25	924	892	1710	2310	5430	3040	3040	4160	1740	1370	982	924
26	966	908	1640	3050	5680	2890	2890	4280	1760	1310	974	932
27	982	924	1460	3450	4970	3050	2790	4190	1790	1290	982	912
28	949	949	1330	3250	4540	2830	2720	4190	1780	1250	982	916
29	1220	991	1340	3010	---	4510	2710	4540	1760	1240	1070	908
30	1120	1030	1290	2790	---	11700	2720	5030	1730	1220	1280	900
31	1020	---	1230	2620	---	8090	---	4910	---	1270	1180	---
TOTAL	27938	28473	52890	97590	120630	159710	99080	104000	74730	46690	34470	29587
MEAN	901	949	1706	3148	4308	5152	3303	3355	2491	1506	1111	986
MAX	1220	1290	2930	7050	11600	11700	6560	5030	4280	2090	1320	1200
MIN	806	806	1020	1200	1920	2830	2430	2640	1730	1220	974	900
AC-FT	55420	56480	104900	193600	239300	316800	196500	206300	148200	92610	68370	58690

CAL YR 1982	TOTAL	773892	MEAN	2120	MAX	18900	MIN	806	AC-FT	1535000
WTR YR 1983	TOTAL	875837	MEAN	2400	MAX	11700	MIN	806	AC-FT	1737000

AVAILABLE

14113000 KLICKITAT RIVER NEAR PITT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-70, 1973, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1950 to September 1970.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)
NOV., 1982												
02...	1120	957	77	7.6	5.5	1.5	12.4	98	K3	100	31	0
FEB., 1983												
24...	0945	5740	76	8.1	8.0	17	--	--	K14	430	29	0
MAY												
17...	1220	2770	63	8.2	10.5	1.8	11.8	107	K11	62	25	0
AUG												
16...	1245	1060	78	8.2	14.5	8.5	9.8	98	--	--	28	0

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)
NOV., 1982											
02...	7.0	3.3	4.1	21	.3	1.5	40	3.5	1.1	<.10	30
FEB., 1983											
24...	6.8	3.0	3.6	20	.3	1.1	36	4.5	.80	<.10	30
MAY											
17...	5.7	2.6	3.3	21	.3	1.2	33	2.4	1.0	<.10	26
AUG											
16...	6.2	3.0	3.6	21	.3	1.5	37	2.9	1.0	<.10	29

DATE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	ALUMINUM, DISSOLVED (UG/L AS AL)
NOV., 1982											
02...	67	75	.09	173	<.10	.060	.30	.030	.020	.020	30
FEB., 1983											
24...	73	72	.10	1130	.30	.080	.50	.100	.040	.030	160
MAY											
17...	59	62	.08	441	<.10	<.060	.60	.020	.010	.010	30
AUG											
16...	63	70	.09	180	<.10	.080	.80	.060	.020	.040	30

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

ABLE

14113000 KLICKITAT RIVER NEAR PITT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV , 1982											
02...	<1	8	<.5	<1	<1	<3	1	48	2	<4	2
FEB , 1983											
24...	<1	17	<.5	<1	<1	<3	2	210	1	6	4
MAY											
17...	<1	8	<.5	<1	<1	<3	2	44	3	10	7
AUG											
16...	<1	8	<.5	<1	<1	<3	2	28	<1	<4	3

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1982											
02...	<.1	<10	2	<1	<1	38	<6	7	7	18	--
FEB , 1983											
24...	<.1	<10	<1	<1	<1	46	<6	11	75	1160	--
MAY											
17...	<.1	<10	<1	<1	<1	39	<6	4	3	22	--
AUG											
16...	<.1	<10	1	<1	<1	36	<6	5	26	74	95

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW¼NW¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft downstream from bridge, 1,000 ft downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi north of Underwood, and at mile 1.9.

DRAINAGE AREA.--386 mi².

PERIOD OF RECORD.--October 1912 to February 1913 (published as "at Condit Dam, near Underwood"), Mar 1915 to September 1930, September 1935 to current year.

REVISED RECORDS.--WSP 484: 1915-17. WSP: 1348 1936-41(M). WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 112.96 ft National Geodetic Vertical Datum of 1929. Prior to March 1913, reference point at dam 1 mi upstream at different datum. March 1915, to July 16, 1918, water-stage recorder at site 200 ft upstream at datum 3.24 ft higher, and July 17, 1918, to Sept. 30, 1930, at datum 2.24 ft higher than present datum.

REMARKS.--Records excellent except for period of no gage-height record Aug. 11 to Sept. 30, which are fair. Diversions for irrigation of about 4,500 acres in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co.

AVERAGE DISCHARGE.--63 years (water years 1916-30, 1936-83), 1,132 ft³/s, 820,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Jan. 15, 1974, gage height, 12.85 ft, from rating curve extended above 6,000 ft³/s; practically no flow at times when powerplant is shut down; minimum daily, 158 ft³/s Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,850 ft³/s Jan. 8, gage height, 7.89 ft; minimum, 68 ft³/s Dec. 13, gage height, 1.33 ft; minimum daily, 536 ft³/s Oct. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	611	800	863	984	1580	2370	3140	1760	1750	1130	963	870
2	606	750	870	970	1510	2380	2980	1800	1670	1270	916	820
3	626	720	1370	984	1480	2250	2670	1790	1590	1260	916	770
4	606	700	2510	1270	1440	2140	2450	1780	1510	1160	896	750
5	602	720	2010	2590	1400	2150	2310	1890	1450	1130	876	740
6	602	730	1610	4660	1380	2160	2220	1880	1450	1100	876	730
7	651	720	1330	5120	1350	2520	2160	1870	1400	1100	870	720
8	666	700	1190	5460	1380	3030	2070	1840	1420	1040	857	710
9	651	680	1100	4150	1410	3790	2010	1740	1430	1030	870	710
10	536	670	1030	3260	1480	5000	1950	1670	1460	1010	857	740
11	616	670	970	2870	1810	4370	1870	1640	1550	1010	870	900
12	606	656	949	2500	1880	3720	1820	1590	1420	1050	850	820
13	602	636	909	2210	2030	3820	1780	1580	1330	1130	830	760
14	592	631	970	1950	1970	3720	1730	1590	1290	1310	820	740
15	582	631	1180	1850	1960	3260	1720	1670	1290	1180	810	724
16	582	651	2230	1790	2270	2900	1700	1660	1290	1100	800	713
17	611	936	2260	1660	3670	2680	1700	1610	1260	1060	790	700
18	620	1280	1900	1680	4860	2560	1730	1610	1290	1030	780	730
19	626	1190	1710	1620	3990	2400	1780	1590	1330	1040	770	750
20	536	1030	1750	1560	3410	2280	1840	1630	1330	1050	760	730
21	602	922	1620	1450	3060	2160	1850	1680	1220	991	760	720
22	696	832	1550	1460	3280	2130	1910	1690	1200	984	760	710
23	950	782	1430	1490	3380	2100	1910	1740	1180	977	770	700
24	880	771	1290	1610	3370	2020	1990	1770	1160	1000	760	710
25	760	724	1240	1620	3170	1970	1950	1800	1170	997	735	710
26	780	724	1190	1920	3000	1930	1860	1850	1130	963	730	710
27	800	724	1120	2150	2720	1970	1500	1800	1120	949	730	720
28	780	776	1030	2010	2490	1890	1780	1780	1110	984	750	700
29	980	876	1020	1880	---	2640	1770	1860	1090	949	830	690
30	920	922	1010	1770	---	4030	1760	1940	1080	936	1000	680
31	850	---	997	1690	---	3600	---	1890	---	936	930	---
TOTAL	21228	23554	42208	68188	66730	85940	60210	53990	39970	32856	25732	22177
MEAN	685	785	1362	2200	2383	2772	2007	1742	1332	1060	830	739
MAX	980	1280	2510	5460	4860	5000	3140	1940	1750	1310	1000	900
MIN	536	631	863	970	1350	1890	1700	1580	1080	936	730	680
AC-FT	42110	46720	83720	135300	132400	170500	119400	107100	79280	65170	51040	43990

CAL YR 1982 TOTAL 496059 MEAN 1359 MAX 9300 MIN 536 AC-FT 983000
WTR YR 1983 TOTAL 542783 MEAN 1487 MAX 5460 MIN 536 AC-FT 1077000

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream-quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE¼SE¼ sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.

DRAINAGE AREA.--240,000 mi^2, approximately.

WATER-STAGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 30.91 ft June 20, 1972; minimum, 4.49 ft July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 23.35 ft June 2; minimum, 5.64 ft Oct. 10.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.26	7.20	7.83	12.46	11.30	11.88	13.75	11.67	12.50	11.61	10.59	11.01
2	7.85	6.82	7.39	12.75	11.38	12.27	15.08	12.40	13.55	11.53	10.61	10.93
3	7.47	6.12	6.86	11.72	10.53	10.94	15.61	14.27	14.68	11.90	11.05	11.47
4	7.95	6.17	7.08	11.75	10.17	10.85	15.61	14.09	14.64	13.40	11.87	12.51
5	8.81	7.78	7.80	11.94	10.25	10.83	14.85	12.24	13.22	15.94	13.44	14.60
6	9.59	8.05	8.57	12.03	10.44	11.35	13.34	12.01	12.72	20.15	15.96	17.78
7	9.76	8.56	9.02	10.80	9.33	9.88	13.34	12.79	13.00	21.73	20.18	21.23
8	9.78	8.58	9.08	11.16	9.44	10.21	14.11	12.49	13.57	21.45	18.74	19.94
9	9.44	7.31	8.29	11.58	10.57	11.13	12.63	12.28	12.45	18.72	18.17	18.47
10	7.89	5.64	6.44	10.92	10.40	10.66	12.47	11.92	12.30	18.36	16.01	17.23
11	8.63	6.23	7.60	10.85	10.45	10.63	11.84	10.83	11.23	17.11	15.74	16.36
12	8.88	7.82	8.27	11.00	10.30	10.62	11.50	10.26	10.73	15.92	14.56	15.06
13	8.77	8.01	8.48	10.84	9.83	10.41	11.55	10.96	11.34	16.39	14.17	15.43
14	9.37	8.28	8.81	10.08	9.13	9.50	12.46	10.72	11.40	16.78	15.89	16.35
15	10.11	8.76	9.39	10.37	9.61	9.94	12.61	11.59	12.16	15.89	14.44	15.36
16	10.02	8.47	9.20	11.42	9.58	10.36	14.86	12.17	13.68	14.41	13.37	13.72
17	9.53	8.49	8.96	11.92	10.81	11.28	15.47	14.59	14.99	13.76	13.38	13.58
18	10.27	9.10	9.63	11.84	10.86	11.29	14.65	14.12	14.38	14.96	13.59	14.24
19	10.19	9.62	9.92	12.74	10.95	11.62	14.55	13.37	13.90	15.53	14.98	15.26
20	10.23	9.53	9.84	12.77	10.46	11.23	14.86	13.14	14.09	15.55	14.46	14.99
21	10.21	8.68	9.41	10.68	9.88	10.17	15.27	14.79	14.97	14.66	14.04	14.38
22	9.47	8.82	9.11	10.30	9.80	10.08	15.29	14.45	15.00	14.16	12.70	13.39
23	9.10	7.50	8.24	10.28	9.61	9.89	14.47	13.06	13.74	12.73	11.90	12.41
24	7.54	6.43	7.05	10.45	9.79	10.24	13.04	12.11	12.67	13.81	11.91	12.97
25	8.19	7.24	7.67	9.85	8.37	8.93	12.12	11.62	11.90	13.91	13.01	13.50
26	9.48	8.02	8.87	9.18	8.01	8.50	11.61	10.50	11.10	14.99	13.76	14.18
27	9.83	9.25	9.58	10.42	8.93	9.56	10.85	10.07	10.42	15.65	14.31	15.02
28	10.96	9.43	10.01	10.46	9.30	9.85	11.82	10.57	11.06	15.38	14.73	15.03
29	12.39	10.93	11.53	11.90	9.89	10.95	12.00	11.20	11.51	15.01	13.96	14.49
30	12.54	12.17	12.38	13.74	11.29	12.20	11.70	10.84	11.27	14.29	12.23	13.10
31	12.52	11.72	12.11	---	---	---	11.52	10.66	11.00	13.55	11.09	12.60
MONTH	12.54	5.64	8.85	13.74	8.01	10.58	15.61	10.07	12.75	21.73	10.59	14.73

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	14.99	12.76	14.17	20.86	20.28	20.52	22.44	22.05	22.25	18.52	17.99	18.27
2	14.91	13.55	14.23	21.21	20.34	20.80	22.65	22.23	22.41	18.27	17.83	18.00
3	15.58	14.72	15.27	21.36	21.10	21.23	22.49	20.18	21.63	18.76	17.71	18.29
4	16.04	15.44	15.74	21.77	21.10	21.38	20.37	19.23	19.89	18.38	17.76	18.05
5	15.64	11.68	14.52	21.79	20.76	21.52	19.22	18.69	18.92	18.53	17.83	18.07
6	12.52	10.69	11.48	20.78	19.95	20.31	19.72	18.49	19.08	18.01	17.52	17.75
7	14.18	12.49	13.62	21.62	19.91	20.36	19.89	18.00	19.23	19.34	17.87	18.67
8	15.14	13.82	14.45	21.94	21.22	21.64	18.02	16.16	17.11	19.72	18.84	19.22
9	16.06	14.26	14.94	22.27	21.23	21.69	16.17	14.49	15.24	19.47	18.82	19.05
10	16.54	15.71	15.97	23.03	21.94	22.56	16.27	14.96	15.82	20.15	18.80	19.39
11	16.79	15.96	16.32	22.15	21.71	21.91	17.01	16.09	16.58	20.70	20.16	20.51
12	16.98	16.23	16.61	22.09	21.61	21.91	16.96	15.93	16.34	20.73	18.27	19.26
13	16.19	14.82	15.24	22.43	21.77	22.11	17.94	16.37	17.33	18.87	18.00	18.45
14	14.94	14.53	14.75	22.77	22.16	22.51	17.53	16.49	16.90	18.70	18.44	18.57
15	15.35	14.41	14.82	22.89	22.67	22.76	16.54	15.64	16.19	18.49	17.14	17.75
16	16.47	15.30	15.94	22.71	22.48	22.60	15.65	15.32	15.50	18.76	16.60	17.63
17	16.01	15.62	15.84	23.16	22.66	22.92	15.34	14.76	15.11	17.23	15.94	16.54
18	18.00	15.87	16.96	23.19	22.99	23.08	15.63	15.04	15.30	17.31	15.73	16.63
19	18.46	17.97	18.28	23.12	22.49	22.90	16.06	15.36	15.76	16.93	15.70	16.43
20	19.13	18.44	18.80	22.51	21.73	22.25	15.34	14.17	14.64	17.27	16.56	16.84
21	19.85	18.88	19.30	21.71	20.98	21.41	14.01	12.53	13.11	16.73	15.50	16.22
22	20.30	17.86	20.08	21.01	20.41	20.73	13.62	12.49	12.70	17.22	14.49	15.76
23	20.68	20.20	20.43	20.53	20.09	20.31	16.51	13.71	15.47	17.50	16.53	16.97
24	20.80	20.59	20.67	20.21	19.95	20.07	18.49	16.33	16.90	18.75	17.30	18.05
25	20.68	20.12	20.39	20.03	19.84	19.96	19.28	17.13	18.07	19.48	17.72	18.78
26	20.10	19.64	19.79	19.81	18.21	18.83	20.54	19.25	20.09	21.19	19.36	20.06
27	19.66	19.25	19.41	18.46	17.98	18.15	20.51	19.64	20.11	22.11	21.16	21.54
28	20.44	19.70	20.00	19.16	18.48	18.83	20.66	18.67	19.75	22.43	21.77	22.17
29	---	---	---	21.99	18.94	20.15	19.75	18.68	19.20	22.79	22.14	22.44
30	---	---	---	22.89	22.07	22.44	18.76	18.42	18.62	22.93	22.33	22.60
31	---	---	---	22.44	22.17	22.29	---	---	---	23.21	22.78	22.97
MONTH	20.80	10.69	16.72	23.19	17.98	21.29	22.65	12.49	17.51	23.21	14.49	18.74

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.25	22.64	22.95	13.07	12.45	12.66	13.62	12.52	13.18	12.02	10.18	11.10
2	23.35	22.64	22.98	13.57	11.71	12.58	12.62	12.12	12.40	11.84	8.92	10.44
3	23.10	21.92	22.72	13.66	13.14	13.52	12.89	12.41	12.62	9.31	8.86	9.07
4	22.13	21.13	21.66	13.60	13.25	13.36	13.02	12.47	12.83	9.43	8.23	8.79
5	21.41	20.43	20.94	14.39	12.29	13.54	12.72	12.11	12.40	8.83	7.15	7.97
6	20.88	20.38	20.71	14.33	12.26	13.58	12.97	11.71	12.41	9.29	6.97	8.25
7	20.72	20.21	20.52	15.55	14.29	15.12	12.97	11.55	12.48	11.39	8.93	10.12
8	20.62	19.75	20.07	15.40	14.75	15.02	13.25	11.34	12.42	11.40	9.29	10.36
9	20.42	19.59	19.96	15.39	12.41	13.95	12.77	10.54	11.89	9.52	7.52	8.53
10	20.35	19.23	19.73	12.40	9.99	11.26	12.76	10.66	11.98	10.57	7.64	9.06
11	19.68	19.18	19.50	12.11	10.15	11.43	12.48	10.63	11.77	10.56	9.02	9.67
12	19.76	19.49	19.62	14.87	12.08	13.33	12.61	10.43	11.71	9.41	7.04	8.00
13	20.20	19.12	19.64	15.17	14.57	14.82	12.41	10.68	11.54	8.10	6.92	7.30
14	19.11	18.04	18.60	15.33	14.12	14.78	11.17	10.33	10.80	8.07	7.03	7.61
15	18.67	15.89	17.38	15.04	13.22	13.92	11.55	10.04	10.79	8.68	8.06	8.36
16	16.56	15.38	15.85	15.89	15.07	15.62	10.44	9.26	10.09	8.18	7.09	7.59
17	17.56	16.49	16.96	15.92	14.12	14.83	11.58	9.25	10.49	9.72	7.06	8.82
18	16.90	15.19	16.05	14.96	14.43	14.75	12.22	9.97	11.15	9.72	7.45	8.30
19	15.21	14.65	14.91	15.24	14.03	14.72	12.53	10.28	11.61	8.07	6.99	7.57
20	15.11	14.86	14.97	14.45	13.62	14.06	13.61	11.42	12.61	9.55	7.13	8.50
21	16.16	14.84	15.51	15.15	14.15	14.69	12.94	11.28	11.80	8.41	7.26	7.73
22	16.13	14.92	15.35	14.19	13.84	14.01	12.02	11.04	11.59	9.72	7.64	8.71
23	15.85	14.93	15.51	14.47	12.48	13.45	11.33	9.16	9.95	9.83	8.52	9.29
24	15.66	14.61	15.24	13.47	11.27	12.36	10.29	8.68	9.69	9.72	7.95	8.44
25	14.56	12.31	13.45	12.78	12.09	12.54	10.28	8.82	9.37	8.87	6.88	7.67
26	13.34	12.34	12.92	13.38	12.64	12.80	10.06	8.80	9.28	8.63	6.84	7.56
27	14.08	13.10	13.75	14.55	13.52	14.12	9.87	8.36	9.12	8.96	7.34	8.09
28	14.15	13.58	13.80	14.66	13.65	14.03	9.65	8.26	8.93	9.16	7.91	8.47
29	13.68	12.65	13.13	14.44	13.63	14.05	8.63	7.95	8.19	9.24	8.04	8.42
30	13.35	12.87	13.09	14.28	12.88	13.29	9.25	7.63	8.41	8.80	7.35	8.10
31	---	---	---	14.60	12.92	13.56	10.10	9.28	9.71	---	---	---
MONTH	23.35	12.31	17.58	15.92	9.99	13.73	13.62	7.63	11.07	12.02	6.84	8.60
YEAR	23.35	5.64	14.33									

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.

INSTRUMENTATION.--Specific conductance and temperature recorders since October 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 242 micromhos May 15, 1977; minimum, 95 micromhos June 26, 27, 1982.
WATER TEMPERATURES: Maximum, 22.5°C Aug. 17, 18, 1977, Aug. 11, 1980; minimum recorded, 0.0°C many days in January and February, 1979.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 222 micromhos Jan. 20; minimum, 104 micromhos June 11, 12.
WATER TEMPERATURES: Maximum, 21.0°C Aug. 15, 17; minimum, 3.5°C on several days in January and February.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	DISCHARGE, IN CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
OCT											
15...	0900	139000	159	8.2	15.0	9.2	--	--	67	19	4.8
JAN											
25...	1130	195000	188	8.0	4.0	12.6	21	91	78	21	6.1
APR											
19...	1000	241000	168	8.3	10.0	12.2	K5	56	69	19	5.2
AUG											
11...	0935	175000	132	8.3	20.0	8.6	K2	<500	57	16	4.2

DATE	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT										
15...	7.7	1.6	64	13	3.7	.20	.100	.300	.60	.03
JAN										
25...	8.1	1.7	75	18	5.0	.20	.080	.470	.40	.06
APR										
19...	7.0	1.6	69	14	3.1	.20	.100	.270	.70	.12
AUG										
11...	3.9	1.0	60	10	2.0	.10	.120	<.100	.50	.06

DATE	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, TOTAL (MG/L AS P)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	TURBIDITY (NTU)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT										
15...	.020	.050	10	96	99	36000	.50	--	--	--
JAN										
25...	.060	.080	13	119	120	62700	12	12	6320	98
APR										
19...	.050	.060	15	103	110	67000	5.9	16	10400	90
AUG										
11...	.050	.060	7.2	75	81	35400	3.5	12	5670	94

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
OCT										
15...	40	2	31	1	<1	<1	<3	--	27	10
JAN										
25...	60	1	31	<1	<1	<1	<3	4	49	<1
APR										
19...	50	1	29	<1	<1	<1	<3	6	78	<1
AUG										
11...	20	2	26	<1	1	<1	<3	4	12	<1

DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT										
15...	8	7	.2	<10	1	<1	<1	100	<6	40
JAN										
25...	16	2	<.1	<10	2	<1	<1	110	<6	22
APR										
19...	11	8	<.1	<10	--	<1	<1	98	<6	27
AUG										
11...	5	<1	<.1	<10	--	<1	<1	84	<6	15

K - Results based on colony count outside acceptable range (non-ideal colony count.)

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1932 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	166	173	199	181	198	164	171	161		---	140
2	139	169	173	202	178	194	166	172	157		---	140
3	139	168	173	201	177	191	165	174	151		---	140
4	141	167	170	193	178	190	166	174	142		---	141
5	143	165	174	185	177	190	166	172	132		---	143
6	145	166	174	184	178	189	165	170	124		---	144
7	147	166	178	181	179	183	167	167	116		---	144
8	147	172	177	174	180	174	166	162	111		---	144
9	148	178	177	171	182	171	166	159	108		---	145
10	149	181	178	175	185	170	166	156	106		---	145
11	153	182	179	178	183	171	168	154	105		---	148
12	156	182	182	181	182	175	168	155	105		---	150
13	158	182	183	183	179	179	169	157	108		---	152
14	159	184	183	185	178	181	169	159	110		---	155
15	162	189	185	186	174	185	169	159	112		---	157
16	164	190	193	187	171	186	171	159	112		---	158
17	166	185	195	189	167	189	171	158	114		---	158
18	168	175	197	196	162	192	171	156	116		134	156
19	169	171	199	208	161	188	170	156	116		134	153
20	167	---	194	219	164	186	170	155	118		134	150
21	167	---	190	217	169	183	172	154	120		135	150
22	166	176	139	209	171	182	167	155	120		136	152
23	164	178	188	202	171	181	165	155	120		137	154
24	165	179	185	195	171	181	164	156	120		137	154
25	165	177	186	190	175	181	164	156	---		138	155
26	164	177	190	183	179	179	164	155	---		139	157
27	---	176	191	178	182	177	166	155	---		139	158
28	---	176	192	181	191	176	166	157	---		140	162
29	---	175	191	184	---	173	165	158	---		140	165
30	165	174	192	185	---	166	166	158	---		141	167
31	164	---	195	184	---	164	---	160	---		140	---
MEAN	156	176	185	190	176	181	167	160	121		137	151

AVAILABLE

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.0	16.0	12.0	12.0	6.5	6.5	4.0	3.5	4.0	4.0	5.5	5.5
2	16.0	15.5	12.0	11.5	6.5	6.5	3.5	3.5	4.5	4.0	5.5	5.5
3	16.0	15.5	11.5	11.5	6.5	6.5	3.5	3.5	4.0	4.0	5.5	5.5
4	15.5	15.5	11.5	11.5	6.5	6.5	4.0	3.5	4.0	4.0	6.0	5.5
5	15.5	15.5	11.5	11.0	6.5	6.0	4.0	4.0	4.0	4.0	6.0	6.0
6	15.5	15.5	11.0	11.0	6.0	6.0	4.0	4.0	4.0	3.5	6.0	6.0
7	15.5	15.0	11.0	10.5	6.5	6.0	4.0	4.0	4.0	3.5	6.0	6.0
8	15.0	15.0	10.5	10.5	6.0	5.5	4.0	4.0	4.0	3.5	6.0	6.0
9	15.5	15.0	10.5	10.5	5.5	5.5	4.0	4.0	3.5	3.5	6.0	6.0
10	15.0	14.5	10.5	10.0	5.5	5.5	4.0	4.0	3.5	3.5	6.5	6.0
11	15.0	14.5	10.0	10.0	5.5	5.0	4.0	4.0	3.5	3.5	6.5	6.5
12	15.0	14.5	10.0	10.0	5.5	5.5	4.0	4.0	3.5	3.5	7.0	6.5
13	15.0	15.0	10.0	9.5	6.0	5.5	4.0	4.0	4.0	3.5	7.0	7.0
14	15.0	15.0	9.5	9.0	6.0	5.5	4.0	3.5	4.0	3.5	7.0	7.0
15	15.0	15.0	9.0	9.0	6.0	5.5	4.0	3.5	4.0	4.0	7.0	7.0
16	15.0	15.0	9.0	8.5	6.0	5.5	4.0	3.5	4.0	4.0	7.0	7.0
17	15.0	14.5	8.5	8.5	6.0	5.5	4.0	4.0	4.0	4.0	7.5	7.0
18	14.5	14.0	9.0	8.5	5.5	5.5	4.0	4.0	4.0	4.0	7.5	7.0
19	14.0	13.5	9.0	8.5	5.5	5.5	4.0	4.0	4.5	4.0	7.5	7.0
20	13.5	13.0	8.5	8.5	5.5	5.0	4.5	4.0	4.5	4.5	7.5	7.0
21	13.0	13.0	8.5	8.5	5.0	5.0	4.0	4.0	4.5	4.5	7.5	7.5
22	13.0	13.0	8.5	7.5	5.0	5.0	4.0	4.0	5.0	4.5	7.5	7.5
23	13.5	13.0	7.5	7.0	5.0	5.0	4.0	4.0	5.0	5.0	7.5	7.5
24	13.5	13.5	7.0	7.0	5.0	5.0	4.0	4.0	5.0	5.0	7.5	7.5
25	13.5	13.0	7.0	6.5	5.0	5.0	4.0	4.0	5.0	5.0	7.5	7.5
26	13.5	13.0	6.5	6.0	5.0	4.5	4.0	4.0	5.0	5.0	7.5	7.5
27	13.0	13.0	6.5	6.0	5.0	4.5	4.0	4.0	5.5	5.0	7.5	7.5
28	13.0	12.5	6.5	6.5	4.5	4.0	4.0	4.0	5.5	5.0	7.5	7.5
29	12.5	12.0	6.5	6.5	4.0	4.0	4.0	4.0	---	---	7.5	7.5
30	12.0	12.0	6.5	6.5	4.0	4.0	4.0	4.0	---	---	7.5	7.5
31	12.0	12.0	---	---	4.0	4.0	4.0	4.0	---	---	8.0	7.5
MONTH	16.0	12.0	12.0	6.0	6.5	4.0	4.5	3.5	5.5	3.5	8.0	5.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	8.0	8.0	11.5	11.5	16.0	15.5	17.0	17.0	20.5	20.0	20.5	20.0
2	8.0	7.5	11.5	11.5	15.5	15.5	17.0	17.0	20.5	20.0	20.5	20.0
3	8.0	7.5	11.5	11.5	16.0	15.5	17.5	17.0	20.5	20.0	20.5	20.0
4	8.0	8.0	12.0	11.5	15.5	15.5	18.0	17.5	20.5	20.0	20.0	19.5
5	8.5	8.0	12.0	12.0	15.5	15.5	18.0	17.5	20.0	20.0	19.5	19.5
6	8.5	8.0	12.0	12.0	16.0	15.5	18.0	17.5	20.5	20.0	19.5	19.5
7	8.5	8.5	12.0	12.0	16.0	15.5	18.0	17.5	20.5	20.5	19.5	19.0
8	8.5	8.5	12.0	12.0	16.0	16.0	17.5	17.5	20.5	20.0	19.5	19.0
9	8.5	8.5	12.0	11.5	16.0	16.0	17.5	17.5	20.0	20.0	19.0	19.0
10	8.5	8.5	11.5	11.5	16.0	15.5	18.0	17.5	20.0	20.0	19.0	19.0
11	8.5	8.5	12.0	11.5	16.0	15.5	18.0	18.0	20.0	20.0	19.0	19.0
12	9.0	8.5	12.0	12.0	16.0	15.5	18.5	18.0	20.0	19.5	19.0	19.0
13	9.0	8.5	12.0	12.0	16.0	16.0	18.5	18.0	20.5	20.0	19.0	19.0
14	9.5	9.0	12.0	12.0	16.0	16.0	18.0	18.0	20.5	20.5	19.5	19.0
15	9.5	9.0	12.0	12.0	16.5	16.0	18.0	18.0	21.0	20.5	19.5	19.5
16	9.5	9.0	12.0	12.0	16.5	16.0	18.5	18.0	20.5	20.5	19.5	19.0
17	10.0	9.5	12.5	12.0	16.0	16.0	19.0	18.5	21.0	20.5	19.0	18.5
18	10.0	9.5	13.0	12.5	16.0	16.0	19.0	18.5	20.5	20.0	18.5	18.0
19	10.0	10.0	13.0	12.5	16.5	16.0	19.0	19.0	20.5	20.5	18.0	17.5
20	10.5	10.0	13.5	13.0	16.5	16.0	19.0	19.0	20.5	20.0	17.5	17.0
21	10.5	10.0	14.0	13.0	16.5	16.0	19.5	18.5	20.5	20.0	17.0	16.5
22	10.5	10.5	14.0	13.5	17.0	16.5	19.5	19.0	20.5	20.0	17.0	17.0
23	10.5	10.5	14.5	13.5	16.5	16.5	19.5	19.0	20.5	20.0	17.5	17.0
24	11.0	10.5	14.5	14.0	16.5	16.5	19.5	19.0	20.5	20.0	17.5	17.5
25	11.0	10.5	15.0	14.5	16.5	16.0	19.0	19.0	20.0	20.0	17.5	17.5
26	11.0	10.5	15.0	15.0	17.0	16.5	19.5	19.0	20.0	20.0	17.5	17.5
27	11.5	11.0	15.5	15.0	17.0	16.5	19.5	19.0	20.5	20.0	17.5	17.0
28	11.5	11.0	16.0	15.5	17.5	17.0	20.0	19.0	20.5	20.5	17.0	17.0
29	11.5	11.0	16.5	16.0	17.0	17.0	20.0	19.5	20.5	20.5	17.0	16.5
30	11.5	11.5	16.5	16.0	17.0	17.0	20.5	20.0	20.5	20.0	16.5	16.0
31	---	---	16.0	16.0	---	---	20.5	20.0	20.5	20.5	---	---
MONTH	11.5	7.5	16.5	11.5	17.5	15.5	20.5	17.0	21.0	19.5	20.5	16.0

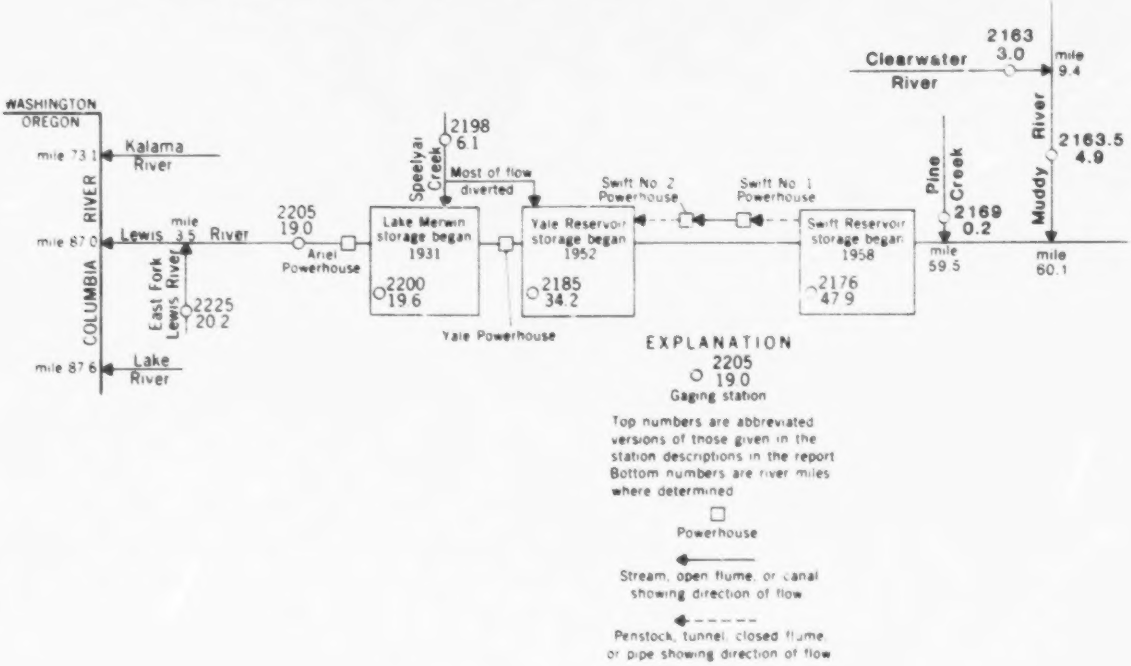
2163
3.0
Clearwater
River
mile
9.4
WASHINGTON
OREGON
mile 73.1
Kalama
River
2198
6.1
Speelyai
Creek
Most of flow
diverted
Swift No. 2
Powerhouse
Swift No. 1
Powerhouse
Pine
Creek
Muddy
River
2163.5
4.9
COLUMBIA RIVER
mile 87.0
Lewis
mile
3.5
River
2205
19.0
Ariel
Powerhouse
Lake Merwin
storage began
1931
2200
19.6
Yale Reservoir
storage began
1952
2185
34.2
Swift Reservoir
storage began
1958
2176
47.9
2169
0.2
mile
59.5
mile
60.1
East Fork
Lewis River
2225
20.2
Yale Powerhouse
mile 87.6
Lake
River
EXPLANATION
2205
19.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 32.—Gaging stations in Lewis River basin.

AVAILABLE

LEWIS RIVER BASIN

14216300 CLEARWATER RIVER NEAR MOUTH, NEAR COUGAR, WA

LOCATION.--Lat 46°12'07", long 122°00'54", in SW¼NW¼ sec.1, T.8 N., R.6 E., Skamania County, Hydrologic Unit 17080002, Gifford Pinchot National Forest, 3 mi upstream from mouth, and 17.0 mi northeast of Cougar.

DRAINAGE AREA.--33 mi².

PERIOD OF RECORD.--October 1981 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,520 ft, from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,220 ft³/s Feb. 20, 1982, gage height, 16.67 ft; minimum daily, 28 ft³/s Sept. 1-3, 7, 8, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,200 ft³/s Mar. 10, gage height, 15.88 ft; minimum daily, 32 ft³/s Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	330	404	146	330	516	415	423	245	91	74	70
2	34	320	404	143	310	470	422	419	211	102	72	64
3	34	264	1580	140	285	404	392	412	192	91	72	60
4	33	252	1880	212	252	404	355	405	182	89	72	58
5	32	256	1440	743	236	410	340	405	173	85	72	56
6	38	256	920	966	224	464	330	403	168	86	72	54
7	47	244	692	1410	216	716	315	381	170	84	70	53
8	48	240	516	1880	212	1140	295	362	170	82	68	51
9	46	212	440	1280	200	2580	272	327	164	81	68	51
10	43	185	360	988	194	2430	260	297	175	80	67	64
11	42	173	305	800	236	1750	252	276	159	76	65	66
12	41	170	280	700	407	1170	232	288	152	78	64	60
13	38	158	256	680	564	880	228	303	138	111	62	57
14	38	149	252	510	556	830	220	350	130	111	61	55
15	38	146	390	430	548	652	216	352	123	103	60	55
16	37	164	1460	355	540	494	228	317	119	101	58	55
17	41	425	1270	325	784	458	256	305	111	101	56	55
18	41	404	976	335	976	434	305	313	115	102	56	56
19	40	440	780	325	820	398	370	331	122	101	55	57
20	39	392	564	305	800	375	398	367	112	101	55	55
21	49	340	470	275	708	360	404	357	105	99	55	55
22	195	300	458	270	750	355	428	376	100	94	55	55
23	164	264	392	300	1190	350	440	376	100	92	55	54
24	161	244	305	340	1200	335	422	369	96	92	55	54
25	155	220	264	380	1040	320	416	377	92	90	54	54
26	208	197	244	420	820	310	404	376	86	86	53	51
27	200	204	204	550	628	315	392	351	86	84	53	51
28	258	404	188	470	516	305	405	342	84	82	53	51
29	540	410	176	420	---	375	400	343	82	81	55	50
30	416	416	16[illegible]	355	---	422	417	329	84	76	86	49
31	355	---	158	300	---	428	---	280	---	74	61	---
TOTAL	3485	8179	18195	16753	15542	20850	10230	10912	4046	2806	1934	1676
MEAN	112	273	587	540	555	673	341	352	135	90.5	62.4	55.9
MAX	540	440	1880	1880	1200	2580	440	423	245	111	86	70
MIN	32	146	158	140	194	305	216	276	82	74	53	49
AC-FT	6910	16220	36090	33230	30830	41360	20290	21640	8030	5570	3840	3320

CAL YR 1982 TOTAL 108489 MEAN 297 MAX 4170 MIN 28 AC-FT 215200
WTR YR 1983 TOTAL 114608 MEAN 314 MAX 2580 MIN 32 AC-FT 227300

14216350 MUDDY RIVER ABOVE CLEAR CREEK, NEAR COUGAR, WA

LOCATION.--Lat 46°07'03", long 122°00'24", in NW¼SE¼ sec.1, T.7 N., R.6 E., Skamania County, Hydrologic Unit 17080002, Gifford Pinchot National Forest, on right bank 0.25 mi downstream from Forest Service Road 125 , approximately 14 mi northeast of Cougar.

DRAINAGE AREA.--84.1 mi².

PERIOD OF RECORD.--August 1980 to September 1981 (discharge measurements only), October 1981 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,200 ft, from topographic map.

REMARKS.--Records poor. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s Feb. 20, 1982, gage height, 12.90 ft ; minimum daily, 117 ft³/s Oct. 5, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred at about 0900 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,100 ft³/s Dec. 3, gage height, 11.88 ft; minimum daily, 117 ft³/s Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	719	1460	421	820	1230	1460	910	515	369	242	256
2	127	530	1510	434	754	1250	1300	858	475	381	240	218
3	125	530	6200	466	705	1120	1060	812	457	314	232	202
4	121	542	4700	875	672	1090	918	782	444	304	225	198
5	117	622	2220	2970	646	1140	850	835	430	301	222	192
6	252	634	1550	3080	640	1250	790	775	416	301	218	192
7	202	547	1110	3700	616	1660	761	784	412	301	[illegible]	190
8	185	495	926	3510	598	3000	719	820	398	304	215	190
9	167	505	867	2740	622	5890	692	719	381	298	212	190
10	149	505	790	2060	660	4750	679	640	470	295	208	259
11	145	520	679	1660	842	3950	634	604	394	292	210	225
12	139	515	640	1260	1330	3920	616	616	373	320	200	200
13	135	510	598	1270	1750	3280	592	634	349	475	195	195
14	135	500	660	1170	1550	2840	586	679	334	398	192	190
15	133	500	1000	1000	1360	2110	569	754	385	369	190	188
16	145	687	3670	842	1450	1660	586	666	334	357	190	185
17	159	2370	2360	754	2150	1270	634	646	334	353	188	182
18	147	1900	3480	775	2680	1090	698	646	408	357	185	222
19	141	1620	2420	761	2170	964	805	672	385	357	185	192
20	137	1330	1840	712	2050	835	876	733	349	345	182	188
21	322	982	1420	698	1820	820	910	835	324	334	178	182
22	1390	726	1090	726	2280	835	964	812	314	320	179	180
23	660	604	835	805	2890	867	982	805	310	320	175	178
24	580	622	719	918	2880	754	1120	798	304	310	175	175
25	547	628	653	926	1920	705	964	768	298	301	171	171
26	842	628	592	1120	1980	692	867	719	301	295	169	171
27	705	692	515	1250	1440	719	775	686	301	292	169	169
28	988	910	466	1030	1220	768	798	660	304	280	173	167
29	1520	1080	412	926	---	1410	782	672	304	265	247	165
30	1040	1310	416	805	---	1910	805	640	310	253	340	163
31	1030	---	416	805	---	1810	---	569	---	248	218	---
TOTAL	12608	24263	46214	40469	40395	55589	24792	22649	11113	10009	6344	5775
MEAN	407	809	1491	1305	1443	1793	826	731	370	323	205	193
MAX	1520	2370	6200	3700	2890	5890	1460	910	515	475	340	259
MIN	117	495	412	421	598	692	569	569	298	248	169	163
AC-FT	25010	48130	91670	80270	80120	110300	49170	44920	22040	19850	12580	11450

CAL YR 1982 TOTAL 275930 MEAN 756 MAX 6810 MIN 117 AC-FT 547300
WTR YR 1983 TOTAL 300220 MEAN 823 MAX 6200 MIN 117 AC-FT 595500

AVAILABLE

14216900 PINE CREEK AT MOUTH, NEAR COUGAR, WA

LOCATION.--Lat 46°04'24", long 122°00'57", in NW¼SW¼ sec.24, T.7 N., R.6 E., Skamania County, Hydrologic Unit 17080002, at U.S. Forest Service Road 125 bridge, approximately 13 mi east of Cougar.

DRAINAGE AREA.--26.0 mi².

PERIOD OF RECORD.--May 1980 to September 1981 (discharge measurements only), October 1981 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,040 ft, from topographic map.

REMARKS.--Records poor. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft³/s Feb. 20, 1982, gage height, 18.60 ft; minimum daily, 110 ft³/s Sept. 17, 18, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred at about 0900 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,180 ft³/s Dec. 3, gage height, 19.79 ft; minimum daily, 112 ft³/s Oct. 13, 19, 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	201	354	246	297	460	384	216	176	183	158	172
2	140	181	366	234	270	482	384	216	172	216	158	176
3	134	163	1190	230	254	522	332	216	172	202	154	142
4	134	177	1000	356	238	471	321	211	172	197	151	134
5	131	215	900	629	222	493	303	211	172	192	151	124
6	149	222	780	803	206	522	279	211	172	188	151	131
7	143	222	600	1240	206	606	279	216	165	183	147	158
8	140	196	480	1280	198	735	265	211	165	179	147	176
9	131	184	400	857	206	704	258	211	165	179	144	165
10	122	163	340	790	222	825	258	206	197	179	144	158
11	120	152	310	670	288	690	251	211	172	183	144	144
12	115	146	300	607	380	618	244	206	165	188	144	129
13	112	137	300	523	460	559	237	206	165	266	144	129
14	115	131	310	424	515	526	230	206	165	211	144	124
15	115	128	900	356	504	471	225	230	176	206	144	124
16	122	170	870	315	559	430	275	206	161	202	145	121
17	131	366	774	282	780	380	225	202	161	202	145	121
18	117	310	694	279	780	342	230	202	188	197	145	139
19	112	320	686	288	654	306	225	202	176	192	145	129
20	112	280	565	279	582	270	225	202	169	183	145	124
21	117	250	509	270	482	246	230	197	165	179	145	121
22	189	230	395	262	471	225	237	197	165	176	145	121
23	137	188	389	306	440	237	251	197	169	176	145	124
24	146	177	356	306	460	237	265	197	169	172	145	126
25	146	170	335	306	450	237	237	188	169	172	145	124
26	205	159	325	324	471	230	237	188	169	169	146	126
27	192	170	300	470	471	230	225	188	169	169	146	126
28	255	366	295	390	460	244	225	183	169	161	146	126
29	406	366	277	370	---	374	221	179	165	161	157	126
30	230	360	268	351	---	866	216	179	165	161	167	126
31	213	---	254	315	---	542	---	176	---	158	161	---
TOTAL	4768	6500	15822	14310	11526	14080	7721	6267	5100	5782	4598	4066
MEAN	154	217	510	462	412	454	257	202	170	187	148	136
MAX	406	366	1190	1280	780	866	384	230	197	266	167	176
MIN	112	128	254	230	198	225	216	176	161	158	144	121
CFSM	5.92	8.35	19.6	17.8	15.8	17.5	9.88	7.77	6.54	7.19	5.69	5.23
IN.	6.82	9.30	22.64	20.47	16.49	20.15	11.05	8.97	7.30	8.27	6.58	5.82
AC-FT	9460	12890	31380	28380	22860	27930	15310	12430	10120	11470	9120	8060

CAL YR 1982 TOTAL 89518 MEAN 245 MAX 1380 MIN 110 CFSM 9.42 IN. 128.08 AC-FT 177600
WTR YR 1983 TOTAL 100540 MEAN 275 MAX 1280 MIN 112 CFSM 10.6 IN. 143.85 AC-FT 199400

14219800 SPEELYAI CREEK NEAR COUGAR, WA

LOCATION.--Lat 46°00'28", long 122°20'46", in NW¼NW¼ sec.17, T.6 N., R.4 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 3.8 mi southwest of Cougar, and at mile 6.1.

DRAINAGE AREA.--12.6 mi².

PERIOD OF RECORD.--May 1959 to May 1978, October 1978 to current year.

REVISED RECORDS.--WSP 1718: 1959. WDR-WA-81-1: 1978-80(P).

GAGE.--Water-stage recorder. Altitude of gage is 500 ft, from topographic map. Prior to Nov. 21, 1959, at site 250 ft downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station. Greater part of flow diverted into Yale Reservoir (see sta 14218500), 240 ft downstream from station.

AVERAGE DISCHARGE.--23 years (water years 1960-77, 1979-83), 107 ft³/s, 115.32 in/yr, 77,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,600 ft³/s probably Nov. 20, 1962 (by slope-area measurement, gage height not determined); minimum observed, 1.8 ft³/s Sept. 24-29, 1967, gage height, 0.24 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s and maxixmum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2000	*2,480	*6.00	Jan. 5	1215	2,060	5.56
Dec. 16	0330	820	3.96	Jan. 7	2030	2,090	5.59

Minimum discharge, 4.9 ft³/s Oct. 5, 6, gage height, 1.13 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	114	353	53	113	159	247	39	23	130	22	36
2	6.0	91	308	53	96	134	218	37	23	206	21	33
3	5.2	76	1310	62	84	115	189	36	21	161	20	30
4	4.6	88	857	387	74	101	163	36	20	116	18	27
5	4.0	165	376	1270	65	99	136	36	19	91	18	24
6	12	216	268	897	72	111	114	35	18	75	17	21
7	25	185	192	1810	85	207	99	41	17	64	16	19
8	38	145	153	918	79	370	89	67	16	57	15	19
9	37	111	123	504	168	509	82	76	16	50	15	19
10	27	90	102	553	255	449	79	73	43	45	14	57
11	20	75	89	368	305	291	71	68	35	40	17	95
12	17	65	84	238	348	213	66	62	31	54	14	63
13	14	56	83	172	424	201	63	56	27	225	13	50
14	12	50	120	132	343	282	64	64	24	225	12	42
15	11	46	391	107	269	247	65	103	29	156	11	37
16	13	93	639	93	338	194	66	90	25	115	11	33
17	26	291	501	89	394	151	65	81	27	91	9.9	30
18	23	276	383	95	441	118	63	70	45	75	9.7	37
19	19	317	284	132	341	98	60	62	85	68	9.3	31
20	17	274	252	129	359	85	56	56	71	58	9.3	27
21	20	198	268	110	311	78	52	50	56	51	9.0	24
22	68	150	250	107	425	72	50	46	49	46	8.4	23
23	68	118	199	191	462	75	57	41	50	41	8.4	21
24	61	97	153	209	349	76	66	38	54	38	8.3	20
25	58	82	125	193	261	80	52	35	51	36	7.8	19
26	90	71	107	222	284	76	56	32	49	33	7.2	18
27	118	74	90	313	254	74	52	30	45	33	7.1	17
28	218	287	79	241	197	112	48	28	40	30	9.1	17
29	497	309	70	184	---	608	44	25	38	28	45	15
30	205	401	64	171	---	664	42	24	40	25	54	15
31	137	---	58	137	---	369	---	24	---	24	32	---
TOTAL	1875.8	4611	8331	10140	7196	6418	2574	1561	1087	2487	485.5	919
MEAN	60.5	154	269	327	257	207	85.8	50.4	36.2	80.2	15.8	30.6
MAX	497	401	1310	1810	462	664	247	103	85	225	54	95
MIN	4.0	46	58	53	65	72	42	24	16	24	7.1	15
CFSM	4.80	12.2	21.3	26.0	20.4	16.4	6.81	4.00	2.87	6.37	1.25	2.43
IN.	5.54	13.61	24.60	29.94	21.25	18.95	7.60	4.61	3.21	7.34	1.44	2.71
AC-FT	3720	9150	16520	20110	14270	12730	5110	3100	2160	4930	969	1820

CAL YR 1982 TOTAL 45207.1 MEAN 124 MAX 1510 MIN 2.3 CFSM 9.84 IN. 133.47 AC-FT 89670
WTR YR 1983 TOTAL 47688.3 MEAN 131 MAX 1810 MIN 4.0 CFSM 10.4 IN. 140.79 AC-FT 94590

RESERVOIRS IN LEWIS RIVER BASIN, WA

14217600 SWIFT RESERVOIR.--Lat 46°03'18", long 122°11'44", in NE¼SW¼ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River, 5.0 mi east of Cougar, and at mile 47.9. DRAINAGE AREA.--481 mi². PERIOD OF RECORD.--September 1958 to current year. GAGE.--water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

REMARKS.--Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,550 acre-ft between elevations 878 ft, lower limit for economic operation, and 1,000.5 ft, maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by Pacific Power & Light Co., for power development. Capacity table furnished by Pacific Power & Light Co., but may be revised after bathymetric survey for period after May 18, 1980 eruption of Mt. St. Helens.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft Nov. 15, 1973, elevation, 1,000.77 ft; minimum since reservoir was first filled, 325,100 acre-ft May 1, 1967, elevation, 881.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 756,086 acre-ft July 13, 14, elevation, 1,000.11 ft; minimum, 578,902 acre-ft Dec. 1, elevation, 958.48 ft.

14218500 YALE RESERVOIR.--Lat 45°57'50", long 122°19'53", in SE¼NE¼ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left end of Yale Dam on Lewis River just upstream from intake, 500 ft upstream from powerhouse, 1.0 mi upstream from Canyon Creek, 3.2 mi southeast of Yale, and at mile 34.2. DRAINAGE AREA.--596 mi². PERIOD OF RECORD.--August 1952 to current year. GAGE.--water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum.

REMARKS.--Reservoir is formed by rock and earthfill dam; storage began July 31, 1952, dam completed in 1952. Usable capacity, 189,530 acre-ft between elevations 430 ft, lower limit for economic operation, and 490 ft, top of spillway gates. Dead storage below elevation 417 ft, 178,050 acre-ft. Figures given herein represent total contents. Water is used by Pacific Power & Light Co., for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft May 13, 1961, elevation, 490.15 ft; minimum observed since reservoir was first filled, 227,600 acre-ft Feb. 22, 1957, elevation, 435.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 401,818 acre-ft July 13, elevation, 490.01 ft; minimum observed, 296,474 acre-ft Apr. 23, elevation. 459.22 ft.

14220000 LAKE MERWIN.--Lat 45°57'23", long 122°33'13", in SW¼SW¼ sec.34, T.6 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left end of dam on Lewis River at Ariel, and at mile 19.6. DRAINAGE AREA.--730 mi². PERIOD OF RECORD.--March 1931 to current year. GAGE.--water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

REMARKS.--Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity, 246,000 acre-ft between elevations 165 ft, lower limit of regulation set by Federal Energy Regulatory Commission, and 235 ft, top of spillway gates. Additional storage of 18,200 acre-ft is provided by flashboards to elevation 239.6 ft. Unused storage below elevation 165 ft, 159,000 acre-ft. Figures given herein represent total contents. Water is used by Pacific Power & Light Co., for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents during the period 1931-52 not determined; maximum since 1953, 424,000 acre-ft Jan. 24, 1959, elevation 239.86 ft; minimum observed since reservoir was first filled, 164,200 acre-ft Dec. 5, 1936, elevation, 166.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 422,606 acre-ft Aug. 12, elevation, 239.55 ft; minimum, 393,661 acre-ft Dec. 20, elevation, 232.19 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	14217600 SWIFT RESERVOIR			14218500 YALE RESERVOIR			14220000 LAKE MERWIN		
Sept. 30......	989.03	706,160	-	477.04	354,650	-	235.88	408,056	-
Oct. 31......	977.17	655,044	-51,116	480.65	367,375	+12,725	235.17	405,266	-2,790
Nov. 30......	958.71	579,799	-75,245	484.38	380,865	+13,490	233.92	400,376	-4,890
Dec. 31......	966.59	611,190	+31,391	475.03	347,713	-33,152	232.99	396,758	-3,618
CAL YR 1982	-	-	+22,160	-	-	-31,175	-	-	-2,798
Jan. 31......	975.57	648,324	+37,134	478.01	358,035	+10,322	234.29	401,921	+5,063
Feb. 28......	980.45	668,994	+20,670	479.94	364,850	+6,815	233.49	398,703	-3,118
Mar. 31......	980.28	668,134	-860	473.68	343,113	-21,737	234.70	403,425	+4,722
Apr. 30......	979.25	663,780	-4,354	462.16	305,612	-37,501	235.27	405,659	+2,234
May 31......	996.47	739,545	+75,765	474.10	344,539	+38,927	234.49	402,603	-3,056
June 30......	997.48	744,090	+4,545	487.44	392,167	+47,628	235.40	406,170	+3,567
July 31......	999.15	751,670	+7,580	488.99	397,979	+5,812	239.09	420,772	+14,602
Aug. 31......	998.27	747,658	-4,012	487.48	392,317	-5,662	238.74	419,380	-1,392
Sept. 30......	974.15	642,360	-105,298	463.68	310,390	-81,927	236.22	409,397	-9,983
WTR YR 1983	-	-	-63,800	-	-	-44,260	-	-	+1,341

14220500 LEWIS RIVER AT ARIEL, WA

(National stream quality accounting network station)

LOCATION.--Lat 45°57'07", long 122°33'46", in NW¼NE¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi southeast of Ariel, 0.5 mi downstream from Ariel Dam and powerplant, 3.3 mi upstream from Cedar Creek, and at mile 19.0.

DRAINAGE AREA.--731 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" water years 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi downstream; low discharges not equivalent due to local inflow.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft National Geodetic Vertical Datum of 1929 (levels by Pacific Power and Light Co.). July to November 1909, nonrecording gage at site 4 mi upstream at different datum. July 27 to Oct. 29, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi downstream at datums 3.90 ft and 0.90 ft higher, respectively, than present datum.

REMARKS.--Water-discharge records excellent. No diversion above station. Flow regulated by Swift and Yale Reservoirs, and Lake Merwin (stations 14217600, 14218500, 14220000).

AVERAGE DISCHARGE.--60 years (water years 1924-83), 4,870 ft³/s, 90.47 in/yr, 3,528,000 acre-ft/yr, adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s Dec. 22, 1933, gage height, 35.0 ft, from floodmarks, from rating curve extended above 56,000 ft³/s on basis of computation of peak flow over dam; no flow at times June 30, July 1- , 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily, 1 ft³/s July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,000 ft³/s Jan. 7, gage height, 12.78 ft; minimum daily, 1,220 ft³/s Aug. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1420	4250	8950	6540	8450	9130	9730	2990	2560	2070	1790	1370
2	1420	4490	5350	6480	8470	8620	9420	3000	2530	2040	1420	2050
3	1420	4570	14100	8640	8430	8660	9200	2990	2530	2030	1420	1340
4	1430	3590	16500	9910	8390	8370	8860	2960	2540	2040	1350	1340
5	1420	4990	11300	11600	8140	8110	8820	2980	2550	2040	1220	1330
6	1420	6080	11600	13400	8070	8270	8920	2960	2540	2580	1230	2490
7	1440	6030	9910	21200	8410	8820	8660	3000	2560	3090	1560	5730
8	1440	6070	8680	24800	8570	9710	8670	3000	2550	2740	1600	5740
9	1430	6000	4890	18700	8570	10900	8640	2980	2560	2450	1620	5720
10	5550	5860	8620	17200	8550	13800	8600	2980	2550	2450	1630	5720
11	5870	4220	8980	17500	8340	16800	6000	2980	2540	2440	1620	5840
12	4090	6230	8970	11500	6560	15200	5780	2990	2550	2860	1650	5870
13	6030	6150	9020	9820	9350	15200	5780	2990	2540	5770	1640	5890
14	6020	6140	9560	8810	8550	13300	5720	3010	2550	8990	1640	5900
15	3140	6160	10500	8710	8490	11500	5370	2990	2530	6760	1600	5910
16	3060	6030	11500	8700	8570	9730	4820	3010	2550	4630	1610	5940
17	3110	7580	11500	8680	9600	8350	4690	2970	2550	3690	1620	5930
18	3110	4740	11500	8510	11000	8340	4580	2990	2550	3700	2330	5360
19	3120	6920	11500	8530	11400	8340	4510	2990	2540	3690	3000	7500
20	3100	8760	9910	8530	10200	8340	4520	2900	2550	3700	1690	8330
21	2470	8930	8800	8460	9130	8370	4560	2800	2550	3270	1450	6560
22	3090	8970	10300	8420	9920	8300	4620	2800	2540	2650	1370	6570
23	3080	8910	11500	8430	10400	8400	4610	2790	2550	2390	1340	6850
24	3100	4320	11500	8440	10000	8400	4610	2750	2550	2390	1330	7260
25	3110	6260	11500	8750	10000	8410	4620	2750	2540	2400	1330	7050
26	3170	7530	9870	9270	9920	8360	4600	2760	2530	2380	1880	6700
27	3130	6330	8720	9960	9880	8370	4580	2760	2550	2860	3460	3520
28	2600	6510	8600	8810	9500	8260	3780	2750	2540	3560	3180	4920
29	8330	9250	8620	8780	---	8900	2980	2760	2540	2770	2980	5560
30	5950	9180	8610	9160	---	11500	2990	2740	2540	2400	2980	5830
31	3210	---	8660	8660	---	10200	---	2760	---	2380	2970	---
TOTAL	100280	191050	309520	334900	254860	306960	183240	90080	76350	99210	57510	148160
MEAN	3235	6368	9985	10800	9102	9902	6108	2906	2545	3200	1855	4939
MAX	8330	9250	16500	24800	11400	16800	9730	3010	2560	8990	3460	8330
MIN	1420	3590	4890	6480	6560	8110	2980	2740	2530	2030	1220	1330
AC-FT	198900	378900	613900	664300	505500	608900	363500	178700	151400	196800	114100	293900
MEAN†	2565	5248	9896	11657	9541	9612	5443	4721	3480	3656	1675	1625
CFSM†	3.51	7.18	13.54	15.95	13.05	13.15	7.45	6.46	4.76	5.00	2.29	2.22
IN.†	4.05	8.01	15.61	18.39	13.60	15.16	8.31	7.45	5.31	5.77	2.64	2.48
AC-FT†	157700	312300	608500	716800	529900	591000	323900	290300	207100	224800	103000	96700

CAL YR 1982 TOTAL 2020710 MEAN 5536 MAX 36100 MIN 1340 AC-FT 4008000 MEAN† 5520 CFSM† 7.55 IN.† 102.5 AC-FT† 3996000
WTR YR 1983 TOTAL 2152120 MEAN 5896 MAX 24800 MIN 1220 AC-FT 4269000 MEAN† 5749 CFSM† 7.86 IN.† 106.8 AC-FT† 4162000

† Adjusted for change in contents of Lake Merwin, Swift Reservoir, and Yale Reservoir.

14220500 LEWIS RIVER AT ARIEL, WA--Continued

(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1959 to June 1960, April 1979 to current year. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1950 to September 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1982											
22...	1500	8970	E52	E7.7	5.0	1.4	10.8	--	<2	40	16
FEB , 1983											
03...	1230	8440	44	7.1	6.0	3.4	12.8	104	K1	K3	13
MAY											
11...	1110	2970	44	E7.2	8.0	2.8	12.0	100	<1	K2	13
AUG											
17...	1105	1630	40	E7.5	14.5	1.1	10.4	105	<1	K3	14

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV , 1982											
22...	0	4.4	1.1	3.5	32	.4	.70	22	2.5	2.5	<.10
FEB , 1983											
03...	0	3.9	.80	2.9	32	.4	.50	19	3.1	2.0	<.10
MAY											
11...	0	3.8	.86	2.7	30	.3	.50	18	2.7	1.8	<.10
AUG											
17...	0	4.0	.97	2.8	29	.3	.50	19	2.7	1.9	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1982											
22...	15	42	43	.06	1020	.19	<.060	.40	.050	.020	<.010
FEB , 1983											
03...	13	35	38	.05	798	.12	<.060	.30	.020	.010	.010
MAY											
11...	14	31	37	.04	249	<.10	<.060	.30	.020	.010	.010
AUG											
17...	14	33	38	.04	145	.14	.060	.30	.030	.030	<.010

E Estimated value based on values reported by the Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts.)

14220500 LEWIS RIVER AT ARIEL, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
NOV , 1982											
22...	20	<1	8	<.5	<1	<1	<3	7	9	1	4
FEB , 1983											
03...	40	<1	5	<.5	<1	<1	<3	3	35	3	<4
MAY											
11...	30	<1	7	<.5	<1	<1	<3	3	29	<1	7
AUG											
17...	20	1	8	<.5	<1	<1	<3	5	8	1	<4

DATE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1982											
22...	17	1.3	<10	1	<1	<1	19	<6	21	2	48
FEB , 1983											
03...	3	.2	<10	1	<1	<1	15	<6	5	8	182
MAY											
11...	6	<.1	<10	19	<1	<1	16	<6	6	5	40
AUG											
17...	9	<.1	<10	1	<1	<1	19	<6	4	--	--

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°40'13", long 122°27'54", in NE¼NW¼ sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft downstream from Basket Creek, 1.5 mi northeast of Heisson, 3.4 mi southwest of Yacolt, and at mile 20.2.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--September 1929 to current year.

GAGE.--Water-stage recorder. Datum of gage is 366.8 ft National Geodetic Vertical Datum of 1929 (from river-profile survey).

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years, 755 ft³/s, 82.02 in/yr, 547,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Dec. 2, 1977, gage height, 12.95 ft; minimum, 29 ft³/s Nov. 3, 1935, Sept. 27, 28, 1967; minimum gage height, 0.04 ft Nov. 3, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2230	*10,200	*9.86	Jan. 7	1430	9,340	9.52
Jan. 5	1430	6,310	8.06				

Minimum discharge, 75 ft³/s Oct. 6, gage height, 0.54 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	626	1870	456	811	1210	1850	350	255	701	218	219
2	91	496	1860	469	713	1040	1690	335	277	1040	208	195
3	91	419	6210	560	634	943	1540	313	242	936	198	163
4	84	440	5520	2730	571	886	1350	296	217	728	188	150
5	78	648	2620	4930	515	852	1150	291	200	594	179	139
6	115	1030	2020	5900	583	1010	990	312	189	505	174	129
7	285	905	1520	8230	668	1550	364	430	178	444	166	122
8	372	713	1210	6210	625	2090	753	575	168	457	163	120
9	384	566	991	3720	1150	2700	718	763	162	393	163	126
10	278	470	826	3110	1490	3140	778	706	411	348	154	302
11	216	401	703	2520	1620	2110	742	630	407	316	163	391
12	176	355	662	1880	2050	1590	674	581	318	347	161	264
13	151	326	667	1450	2270	1570	636	520	272	1180	143	213
14	133	290	805	1160	1900	2060	612	508	243	1600	135	186
15	122	272	2170	958	1550	1760	586	773	281	1080	130	171
16	117	349	4470	838	1840	1420	560	709	247	834	127	158
17	196	1360	3300	737	2560	1160	538	615	238	719	124	151
18	206	1710	2420	701	3030	964	526	547	339	591	121	157
19	157	1750	1880	844	2370	816	509	482	530	584	118	164
20	143	1570	2320	818	2200	710	484	436	451	507	117	135
21	143	1190	2310	738	1950	646	455	404	399	443	114	123
22	333	903	2020	693	2270	615	441	370	349	396	110	120
23	412	720	1570	934	2260	600	478	342	402	362	110	118
24	305	606	1220	1220	2170	560	620	318	444	341	114	116
25	262	524	1020	1160	1890	605	481	298	382	321	107	114
26	399	464	928	1220	1980	575	486	278	356	302	102	110
27	387	449	768	1780	1790	621	431	259	316	294	102	114
28	550	960	676	1480	1450	775	404	239	288	254	126	107
29	2600	1340	605	1170	---	2940	389	227	289	260	247	103
30	1230	1920	548	1120	---	4000	368	219	411	239	310	99
31	745	---	498	937	---	2480	---	228	---	224	171	---
TOTAL	10853	23772	56207	60673	44910	43998	22103	13354	9291	17385	4743	4779
MEAN	350	792	1813	1957	1604	1419	737	431	310	561	153	159
MAX	2600	1920	6210	8230	3030	4000	1850	773	530	1600	310	391
MIN	78	272	498	456	515	560	368	219	162	224	102	99
CFSM	2.80	6.34	14.5	15.7	12.8	11.4	5.90	3.45	2.48	4.49	1.22	1.27
IN.	3.23	7.07	16.73	18.06	13.37	13.09	6.58	3.97	2.77	5.17	1.41	1.42
AC-FT	21530	47150	111500	120300	89080	87270	43840	26490	18430	34480	9410	9480

CAL YR 1982 TOTAL 297867 MEAN 816 MAX 9240 MIN 42 CFSM 6.53 IN. 88.65 AC-FT 590800
WTR YR 1983 TOTAL 312068 MEAN 855 MAX 8230 MIN 78 CFSM 6.84 IN. 92.87 AC-FT 619000

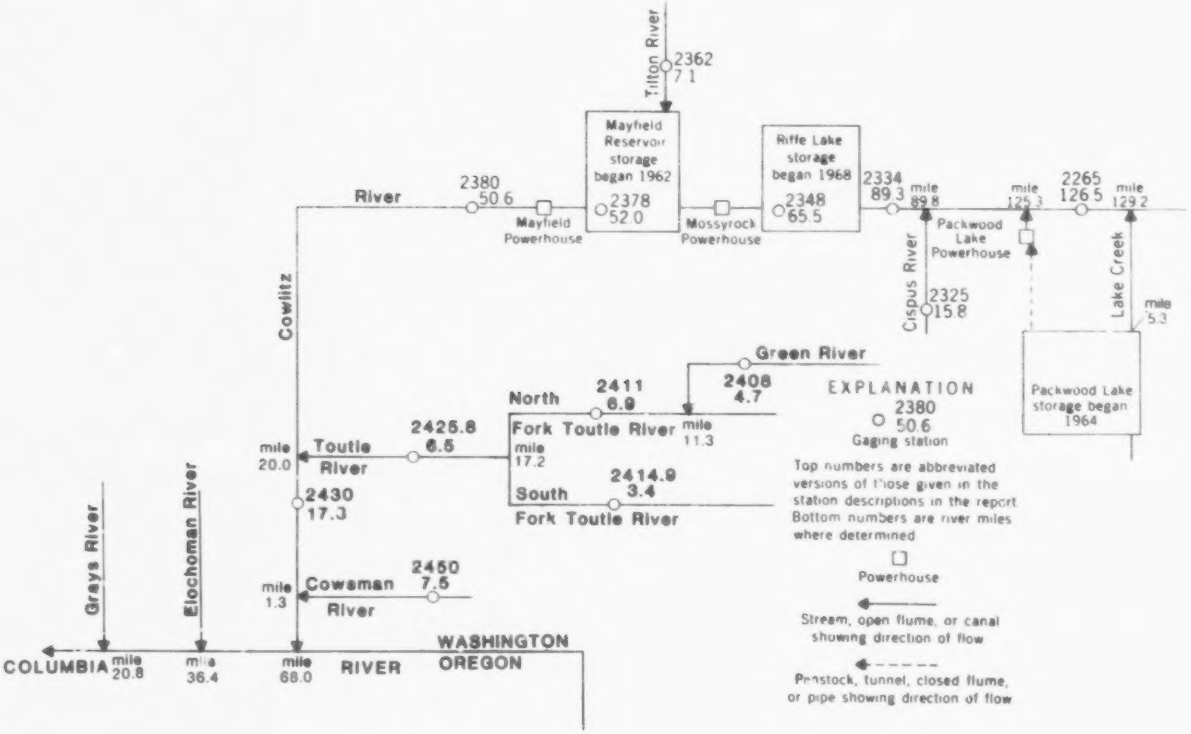
Tilton River
2362
7.1
Mayfield Reservoir storage began 1962
2378
52.0
Riffe Lake storage began 1968
2348
65.5
2380
50.6
River
Mayfield Powerhouse
Mossyrock Powerhouse
2334
89.3
mile 89.8
Packwood Lake Powerhouse
mile 125.3
2265
126.5
mile 129.2
Cispus River
2325
15.8
Lake Creek
mile 5.3
Packwood Lake storage began 1964
Cowlitz
Green River
2408
4.7
North
2411
6.9
Fork Toutle River
mile 11.3
2425.8
6.5
Toutle River
mile 20.0
mile 17.2
2414.9
3.4
South
Fork Toutle River
2430
17.3
Grays River
Elochoman River
2450
7.5
mile 1.3
Cowsman River
WASHINGTON
OREGON
COLUMBIA mile 20.8
mile 36.4
mile 68.0
RIVER
EXPLANATION
2380
50.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow

Figure 33.—Gaging stations in Cowlitz River basin and downstream to mouth of Columbia River.

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'47", long 121°40'41", in SE¼SE¼ sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 17080004, on right bank on upstream side of Forest Service bridge, 0.6 mi northwest of Packwood, 0.8 mi upstream from Skate Creek, and at mile 126.5.

DRAINAGE AREA.--287 mi².

PERIOD OF RECORD.--July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19. Water temperatures, November 1970 to April 1971.

REVISED RECORDS.--WSP 884: 1938. WSP 1348: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum. Feb. 8, 1978, to Jan. 5, 1981, on left bank downstream side of bridge at present datum.

REMARKS.--Records good except those for period May 1-25, which are fair. Minor regulation by Packwood Lake beginning June 1964. Small diversions for domestic use. Tacoma City Light satellite telemeter at station. Water is diverted from Packwood Lake for power generation and is discharged into Cowlitz River about 1 mi downstream from this station. Monthly mean diversion in cubic feet per second for the current water year, as furnished by the Washington Power Supply System, is as follows:

October..........	29.8	January..........	105	April..........	54.2	July..........	151
November.........	79.6	February.........	78.8	May............	134	August........	84.1
December.........	96.9	March............	48.3	June...........	178	September.....	94.8

AVERAGE DISCHARGE.--62 years, (water years 1912-19, 1930-83), 1,625 ft³/s, 1,177,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Dec. 21, 1933, gage height, 13.0 ft; maximum gage height, 13.73 ft Dec. 2, 1977; minimum discharge, 130 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2245	*17,500	*10.14	Jan. 8	0545	9,480	7.83

Minimum discharge, 297 ft³/s Oct. 5, 6, gage height, 2.86 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313	1220	949	555	1010	1530	1890	1770	3380	1960	1600	957
2	369	1030	920	555	938	1420	1720	1820	2990	2280	1380	912
3	359	896	7040	576	875	1340	1530	1750	2750	1920	1220	720
4	321	1060	8970	1000	830	1320	1410	1760	2580	1890	1130	659
5	303	1240	3960	4800	790	1330	1310	2220	2470	2140	1130	603
6	346	1340	2730	4740	782	1360	1270	2150	2650	2100	1140	575
7	492	1180	1990	6550	766	1490	1270	2020	3110	1720	1160	568
8	500	1020	1620	7770	726	1880	1200	1760	3640	1420	1200	522
9	647	890	1380	4500	726	3870	1150	1510	3480	1340	1170	504
10	582	787	1200	3640	742	4940	1100	1320	3560	1340	1180	1110
11	541	713	1070	3170	911	3960	1040	1250	2860	1540	1110	1610
12	501	660	1020	2630	1030	3100	983	1260	2340	2500	930	939
13	468	621	983	2230	1200	2710	938	1420	2140	5210	903	792
14	445	572	929	1960	1200	2440	911	1630	2340	4040	921	712
15	418	548	1080	1720	1170	2160	902	1760	2660	2730	939	652
16	388	589	2650	1540	1250	1910	956	1580	2260	2070	867	610
17	459	1310	2580	1440	1950	1740	1100	1500	2540	1840	816	554
18	397	1720	2050	1400	2700	1580	1330	1640	2680	1770	808	589
19	371	1510	1740	1390	2220	1430	1600	1870	2250	1820	768	575
20	356	1320	1500	1310	2020	1330	1990	2400	1960	1780	736	528
21	472	1110	1340	1220	1820	1270	2160	3170	1780	1550	704	510
22	2010	942	1220	1150	1920	1250	1960	3300	1760	1600	720	504
23	1580	826	1080	1110	2660	1210	1800	3980	1920	1810	736	489
24	1000	761	974	1080	3150	1160	1880	4480	1840	1730	696	487
25	792	711	893	1050	2790	1140	1620	4700	1620	1500	666	485
26	1040	676	839	1090	2330	1090	1390	4520	2030	1370	638	508
27	1010	692	742	1450	1960	1080	1250	4320	2260	1290	638	516
28	1040	964	694	1400	1710	1060	1200	5270	2230	1340	673	465
29	1850	1000	646	1280	---	1560	1270	6250	2190	1250	800	444
30	1440	996	614	1170	---	2550	1520	5500	2050	1270	993	433
31	1180	---	583	1080	---	2270	---	4310	---	1520	768	---
TOTAL	21990	28904	55936	66556	42176	58480	41650	84190	74310	59640	29140	19532
MEAN	709	963	1806	2147	1506	1886	1388	2716	2477	1924	940	651
MAX	2010	1720	8970	7770	3150	4940	2160	6250	3640	5210	1600	1610
MIN	303	548	583	555	726	1060	902	1250	1620	1250	638	433
AC-FT	43620	57330	111000	132000	83660	116000	82610	167000	147400	118300	57800	38740

CAL YR 1982	TOTAL	612479	MEAN	1678	MAX	10700	MIN	303	AC-FT	1215000
WTR YR 1983	TOTAL	582564	MEAN	1596	MAX	8970	MIN	303	AC-FT	1156000

ILABLE

14232500 CISPUS RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°26'50", long 121°51'46", in NW¼ sec.18, T.11 N., R.8 E., (unsurveyed), Lewis county, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 60 ft upstream from bridge to Tower Rock ranger station, 4.1 mi downstream from North Fork, 8.0 mi southeast of Randle, and at mile 15.8.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--October 1910 to February 1912, September 1929 to current year.

REVISED RECORDS.--WSP 794: 1934. WSP 1288: Drainage area. WSP 1935: 1950-53, 1954(M), 1955-56, 1957(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 1,221.60 ft National Geodetic Vertical Datum of 1929. Prior to Mar. 1, 1912, nonrecording gage at site 1.0 mi upstream at different datum. Sept. 28, 1929, to Nov. 26, 1949, Oct. 1-24, 1950, water-stage recorder at site 450 ft upstream at datum 0.26 ft higher.

REMARKS.--Records excellent except those for period of shifting control Dec. 9 to Jan. 8, which are good. No regulation or diversion above station. Tacoma City Light satellite telemeter at station.

AVERAGE DISCHARGE.--55 years (water years 1911, 1930-83), 1,349 ft³/s, 57.04 in/yr, 976,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s Jan. 15, 1974, gage height, 12.58 ft, from rating curve extended above 8,700 ft³/s on basis of slope-area measurement of peak flow; minimum, 183 ft³/s Dec. 30, 1936; minimum gage height, 2.55 ft Oct. 25, 1942, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0030	*10,600	*9.24	Feb. 24	1045	4,020	6.66
Dec. 16	1000	5,800	7.39	Mar. 10	1030	7,160	8.00
Jan. 8	0830	7,840	8.26	May 30	0045	5,370	7.28

Minimum discharge, 404 ft³/s Oct. 6; minimum gage height, 3.84 ft Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	415	1230	1410	948	1290	1980	2240	2120	3320	1370	912	680
2	428	1070	1310	930	1180	1840	2020	2090	2860	1660	832	610
3	436	966	4460	921	1090	1730	1790	2040	2540	1450	792	561
4	418	1030	7680	1250	1010	1680	1610	2070	2350	1360	736	534
5	410	1170	4390	3600	948	1670	1490	2440	2270	1390	728	522
6	448	1230	3360	4540	930	1680	1420	2460	2300	1390	720	492
7	543	1130	2650	5760	894	1940	1390	2440	2410	1240	728	524
8	530	1030	2240	7080	840	2350	1310	2220	2520	1140	736	492
9	538	939	1970	5080	867	4830	1240	2000	2480	1090	736	504
10	515	867	1750	3970	849	6820	1190	1790	2640	1030	728	528
11	501	808	1560	3400	993	5520	1110	1670	2400	1080	728	659
12	483	768	1490	2920	1360	4240	1040	1620	2110	1310	688	554
13	465	736	1410	2540	1730	3760	984	1660	1880	1880	645	522
14	452	698	1370	2220	1580	3400	948	1810	1840	2120	638	504
15	441	666	1750	2000	1480	2900	930	2090	1970	1740	631	498
16	434	688	5280	1810	1630	2540	948	1970	1790	1460	603	474
17	489	1460	4430	1700	2350	2240	1030	1880	1750	1340	589	468
18	476	1840	3420	1720	3130	2010	1230	2050	1830	1300	582	492
19	458	1700	2860	1740	2620	1810	1520	2160	1760	1300	582	504
20	447	1500	2540	1610	2350	1670	1780	2510	1640	1250	568	474
21	470	1320	2230	1490	2120	1560	2000	3040	1510	1130	540	468
22	1270	1150	2140	1390	2240	1490	2080	3220	1450	1080	528	456
23	1330	1020	1860	1330	3220	1410	2020	3740	1480	1090	540	456
24	947	948	1700	1350	3880	1340	2210	4100	1430	1090	528	456
25	815	894	1540	1320	3420	1310	2000	4210	1310	984	528	450
26	1050	849	1420	1540	2930	1220	1780	4100	1370	912	522	450
27	1010	867	1290	2110	2510	1200	1640	3840	1480	894	528	456
28	1060	1490	1170	1970	2180	1140	1580	4170	1480	876	534	438
29	2270	1570	1090	1760	---	1810	1660	4940	1410	867	582	432
30	1720	1520	1040	1570	---	2920	1810	4920	1400	808	752	426
31	1370	---	984	1410	---	2620	---	4040	---	885	617	---
TOTAL	22639	33144	73794	72979	51621	74630	46000	85410	58980	38516	20101	15084
MEAN	730	1105	2380	2354	1844	2407	1533	2755	1966	1242	648	503
MAX	2270	1840	7680	7080	3880	6820	2240	4940	3320	2120	912	680
MIN	410	666	984	921	840	1140	930	1620	1310	808	522	426
CFSM	2.27	3.44	7.41	7.33	5.74	7.50	4.78	8.58	6.12	3.87	2.02	1.57
IN.	2.62	3.84	8.55	8.46	5.98	8.65	5.33	9.90	6.84	4.46	2.33	1.75
AC-FT	44900	65740	146400	144800	102400	148000	91240	169400	117000	76400	39870	29920

CAL YR 1982 TOTAL 661837 MEAN 1813 MAX 12700 MIN 410 CFSM 5.65 IN. 76.70 AC-FT 1313000
WTR YR 1983 TOTAL 592898 MEAN 1624 MAX 7680 MIN 410 CFSM 5.06 IN. 68.71 AC-FT 1176000

14233400 COWLITZ RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°28'13", long 122°05'51", in NE¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.5 mi downstream from Cispus River, 8.1 mi southwest of Randle, and at mile 89.3.

DRAINAGE AREA.--1,030 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to current year. Prior to October 1967, published as "near Kosmos." Records published for both sites October 1967 to September 1968. Monthly discharge only for some period published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 799.42 ft National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1948, nonrecording gage at site 0.9 mi downstream at different datum. Dec. 3, 1948, to September 1967, at site 1.4 mi downstream at datum 40.13 ft lower (levels by city of Tacoma).

REMARKS.--Water-discharge records excellent. Minor regulation by Packwood Lake (14225400) beginning June 1964. Small diversions for domestic use and irrigation above station. Tacoma City Light satellite telemeter at station.

AVERAGE DISCHARGE.--36 years, 4,980 ft³/s, 65.66 in/yr, 3,608,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,300 ft³/s Dec. 3, 1977, gage height, 26.54 ft; minimum, 518 ft³/s Nov. 29, 1952, gage height, 2.34 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 4	0600	*30,300	*17.35	Mar. 10	1345	17,500	14.16
Jan. 5	1115	27,100	16.63				

Minimum discharge, 1,070 ft³/s Oct. 6, gage height, 6.28 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	4190	4200	2820	4300	5890	6630	5600	9140	4510	3480	2150
2	1190	3780	4000	2750	3990	5510	6120	5730	7890	5170	3350	2390
3	1280	3370	10100	2830	3750	5140	5530	5650	7160	4850	3040	2030
4	1210	3270	27400	3490	3520	4950	5060	5550	6650	4550	2810	1810
5	1100	3830	17000	12000	3290	4880	4740	6160	6300	4610	2700	1680
6	1120	4470	11700	17800	3190	4920	4510	6560	6330	4750	2690	1600
7	1500	4370	8780	20700	3700	5300	4400	6450	6730	4340	2650	1660
8	1610	3980	7090	25900	3010	6210	4230	6040	7420	3860	2690	1630
9	1750	3620	6060	20400	3010	11000	4050	5510	7690	3640	2750	1640
10	1750	3500	5310	15200	3040	17000	3910	4990	7570	3440	2650	1630
11	1670	3050	4770	13200	3480	14800	3730	4660	7340	3500	2730	3260
12	1570	2850	4420	11000	3970	11400	3510	4540	6250	4210	2530	2540
13	1480	2700	4290	9380	4840	9850	3360	4570	5580	7070	2330	2230
14	1420	2490	4010	8070	4880	9040	3220	4960	5370	9840	2280	2060
15	1360	2270	4470	7110	4820	8070	3110	5610	5820	7580	2260	1930
16	1300	2220	10500	6340	4940	7130	3080	5560	5520	6200	2190	1840
17	1430	3300	11500	5860	6070	6320	3740	5230	5270	5370	2080	1730
18	1480	5240	9340	5650	9200	5800	3670	5350	5910	4990	2040	1730
19	1340	5100	7910	5710	8410	5320	4380	5710	5860	4810	1980	1880
20	1290	4650	6960	5400	7550	4890	5170	6370	5530	4720	1880	1690
21	1280	4370	6320	5030	6930	4620	5910	7950	5060	4350	1810	1610
22	2750	3900	5840	4680	6880	4450	6090	8610	4800	4050	1780	1590
23	4600	3510	5220	4500	8600	4280	5890	9570	4840	4080	1860	1530
24	3400	3220	4700	4420	10800	4070	6200	10900	4840	4190	1850	1490
25	2850	2940	4340	4310	10200	3980	5840	11200	4390	3820	1810	1490
26	2970	2770	4070	4580	8750	3770	5120	11200	4430	3610	1790	1460
27	3310	2730	3720	5980	7470	3640	4690	10400	4940	3340	1680	1520
28	3320	3760	3440	6110	6540	3510	4460	10900	4960	3330	1680	1480
29	6270	4360	3240	5580	---	4410	4510	13000	4800	3210	1810	1420
30	5620	4350	3090	5080	---	7670	4860	13300	4760	3060	2380	1370
31	4530	---	2960	4650	---	7600	---	11200	---	3210	2250	---
TOTAL	68900	108160	216740	256510	158630	205420	139220	229030	179150	142260	71810	54070
MEAN	2223	3605	6992	8275	5665	6626	4641	7388	5972	4589	2316	1802
MAX	6270	5240	27400	25900	10800	17000	6630	13300	9140	9840	3480	3260
MIN	1100	2220	2960	2750	3010	3510	3080	4540	4390	3060	1680	1370
CFSM	2.16	3.50	6.79	8.03	5.50	6.43	4.51	7.17	5.80	4.46	2.25	1.75
IN.	2.49	3.91	7.83	9.26	5.73	7.42	5.03	8.27	6.47	5.14	2.59	1.95
AC-FT	136700	214500	429900	508800	314600	407500	276100	454300	355300	282200	142400	107200

CAL YR 1982 TOTAL 1983140 MEAN 5433 MAX 33700 MIN 1100 CFSM 5.27 IN. 71.62 AC-FT 3934000
WTR YR 1983 TOTAL 1829920 MEAN 5013 MAX 27400 MIN 1100 CFSM 4.87 IN. 66.09 AC-FT 3630000

LABLE

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1952 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1952 to August 1968, April 1969 to September 1982.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
DEC , 1982										
14...	0920	66	6.4	5.0	5.0	12.3	K3	<.10	.40	.030
MAR , 1983										
22...	0930	66	7.0	8.5	3.0	11.6	<1	<.10	.30	.010
JUN										
21...	0930	49	6.9	10.0	2.0	11.7	K13	<.10	.40	.020
SEP										
13...	0910	59	7.0	12.0	10	10.2	34	<.10	.50	.050

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE¼SW¼ sec.16, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi east of Mossyrock, and at mile 65.4.

DRAINAGE AREA.--1,154 mi².

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--WDR WA-74-1: 1973.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Usable capacity, 1,297,400 acre-ft between elevations 600 ft, minimum operating level, and 770 ft, normal operating pool. Unused storage below elevation 600 ft, 288,900 acre-ft. Crest of spillway is at elevation 728.5 ft and top of taintor gates are at elevation 778.5 ft. Water used by city of Tacoma for power development. Elevation records collected in cooperation with city of Tacoma. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,686,300 acre-ft July 31, 1972, elevation, 778.63 ft; minimum since normal low operating level was attained, 658,503 acre-ft Mar. 17, 1977, elevation, 666.88 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,676,494 acre-ft July 19, elevation, 777.80 ft; minimum, 1,240,211 acre-ft Feb. 11, elevation, 736.69 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	770.02	1,586,512	--
Oct. 31	763.24	1,511,290	-75,222
Nov. 30	746.23	1,333,858	-177,432
Dec. 31	742.07	1,292,549	-41,309
CAL YR 1982	--	--	-12,369
Jan. 31	741.65	1,288,420	-4,129
Feb. 28	750.78	1,379,919	+91,499
Mar. 31	755.66	1,430,385	+50,466
Apr. 30	759.17	1,467,443	+37,058
May 31	773.74	1,629,101	+161,658
June 30	776.47	1,660,869	+31,768
July 31	776.07	1,656,188	-4,681
Aug. 31	773.26	1,623,559	-32,629
Sept. 30	766.70	1,549,329	-74,230
WTR YR 1983	--	--	-37,183

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year (discontinued).

REMARKS.--Descriptive location given is for lake outlet. Samples are taken near the dam.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
DEC., 1982											
14...	1000	1.00	55	--	8.5	4.0	11.0	<1	<.10	.30	.020
14...	1015	100	55	--	8.5	4.0	11.0	<1	<.10	.30	.020
14...	1030	300	55	--	7.0	4.0	11.3	<1	<.10	.30	.050
MAR., 1983											
22...	0950	1.00	58	--	7.0	3.0	11.7	<1	<.10	.60	.010
22...	0955	100	58	--	7.0	3.0	11.7	<1	<.10	.50	.010
22...	1000	300	58	--	6.5	12	11.6	<1	<.10	.40	.030
JUN											
21...	1005	1.00	55	7.0	16.0	1.0	10.2	<1	<.10	.20	.010
21...	1015	100	58	7.1	11.0	1.0	10.3	<1	<.10	.30	.020
21...	1020	300	63	7.1	7.0	2.0	10.6	<1	<.10	.30	.030
SEP											
13...	1000	1.00	55	--	16.0	1.0	9.1	<1	<.10	.30	.040
13...	1005	100	60	--	13.0	1.0	9.1	<1	<.10	.40	.030
13...	1010	300	63	--	9.5	2.0	9.1	<1	<.10	.50	.040

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'30", in NE¼SW¼ sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi upstream from Bear Canyon Creek, 3.5 mi southeast of Cinebar, and at mile 7.1.

DRAINAGE AREA.--141 mi².

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WDR WA-72-1: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 600 ft, from topographic map.

REMARKS.--Water-discharge records excellent. Several small diversions for municipal and domestic use above station. No regulation. Tacoma City Light satellite telemeter at station.

AVERAGE DISCHARGE.--27 years, 848 ft³/s, 81.67 in/yr, 614,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s Dec. 2, 1977, gage height, 17.00 ft, from rating curve extended above 10,500 ft³/s on basis of slope-area measurement at gage height of 14.79 ft; minimum, 52 ft³/s Sept. 27-29, 1967; minimum gage height, 1.96 ft Aug. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 3	2130	9,700	10.67	Jan. 5	1430	*11,000	*11.36

Minimum discharge, 81 ft³/s Oct. 1, gage height, 2.23 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	928	1350	479	723	982	1600	346	220	392	256	322
2	93	723	1550	513	660	902	1570	358	226	553	246	318
3	104	579	6500	718	611	813	1430	330	216	538	232	266
4	95	729	5020	3270	569	753	1240	306	201	469	253	236
5	89	995	2440	8310	528	741	1100	306	192	410	213	213
6	104	1480	1810	5670	553	820	982	314	183	371	204	195
7	280	1220	1360	8240	655	909	696	366	174	342	195	183
8	276	935	1110	7830	574	1730	807	460	166	318	189	177
9	283	741	948	4630	694	2590	765	533	160	298	186	216
10	226	611	826	7440	942	2420	741	538	334	276	150	536
11	189	523	729	4280	1180	1940	712	479	432	259	207	1110
12	163	465	718	2670	1480	1500	660	451	362	428	210	655
13	144	423	747	1980	2170	1260	622	410	302	2750	180	484
14	132	379	765	1540	1910	1150	590	392	269	2210	172	388
15	121	350	1040	1270	1470	1060	564	638	287	1510	160	334
16	114	437	2060	1100	1520	942	543	606	269	1110	155	298
17	183	2080	1900	1020	2140	845	528	533	266	876	150	265
18	216	1820	1590	975	2470	753	518	473	460	735	144	346
19	172	1620	1370	1040	1800	683	508	441	845	638	139	362
20	147	1450	1260	975	1830	622	488	405	801	616	137	299
21	155	1140	1250	876	1720	579	469	375	616	528	132	269
22	362	909	1190	801	1590	569	446	350	508	469	129	246
23	437	759	1020	883	2010	523	441	326	548	423	127	229
24	330	655	876	883	1980	493	553	302	548	392	127	216
25	276	579	789	845	1670	533	465	283	493	371	127	207
26	350	523	753	838	1460	498	441	269	446	362	121	198
27	569	528	666	1210	1280	479	410	256	396	346	118	192
28	712	1200	611	1190	1110	508	383	239	354	354	127	183
29	2070	1490	574	988	---	1980	366	223	330	314	172	177
30	1070	1400	538	909	---	2690	354	213	330	287	334	169
31	771	---	518	795	---	2130	---	216	---	269	229	---
TOTAL	10315	27671	43878	74168	37299	34397	21192	11737	10934	19214	5521	9289
MEAN	333	922	1415	2393	1332	1110	706	379	364	620	178	310
MAX	2070	2080	6500	8310	2470	2690	1600	638	845	2750	334	1110
MIN	82	350	518	479	528	479	354	213	160	259	118	169
CFSM	2.36	6.54	10.0	17.0	9.45	7.87	5.01	2.69	2.58	4.40	1.26	2.20
IN.	2.72	7.30	11.58	19.57	9.84	9.07	5.59	3.10	2.98	5.07	1.46	2.45
AC-FT	20460	54890	87030	147100	73980	68230	42030	23280	21690	38110	10950	18420

CAL YR 1982 TOTAL 335400 MEAN 919 MAX 11700 MIN 71 CFSM 6.52 IN. 88.49 AC-FT 665300
WTR YR 1983 TOTAL 305615 MEAN 837 MAX 8310 MIN 82 CFSM 5.94 IN. 80.63 AC-FT 606200

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14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River, 0.3 mi downstream from Silver Creek, 4 mi south of town of Silver Creek, and at mile 52.0.

DRAINAGE AREA.--1,392 mi².

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft between elevation 415 ft, lower limit of operation, and 425 ft, top of taintor gates. Dead storage below elevation 415 ft, 112,340 acre-ft. Crest of spillway is at elevation 365 ft. Water is used by city of Tacoma for power development. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft Dec. 9, 1971, elevation, 425.40 ft; minimum since normal operating level was attained, 112,830 acre-ft June 4, 1969, elevation, 415.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,165 acre-ft Nov. 1, elevation, 424.76 ft; minimum, 116,503 acre-ft May 11, elevation, 416.03 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	424.03	131,546	--
Oct. 31	424.20	131,930	+384
Nov. 30	424.49	132,578	+648
Dec. 31	421.98	127,028	-5,550
CAL YR 1982	--	--	-3,626
Jan. 31	423.76	130,948	+3,920
Feb. 28	422.83	128,896	-2,052
Mar. 31	423.57	130,524	+1,628
Apr. 30	423.28	129,886	-638
May 31	423.23	129,776	-110
June 30	423.63	130,656	+880
July 31	423.80	131,040	+384
Aug. 31	423.81	131,062	+22
Sept. 30	423.54	130,458	-604
WTR YR 1983	--	--	-1,088

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year (discontinued).

REMARKS.--Descriptive location given is for reservoir outlet. Samples are taken near the dam.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
DEC , 1982												
14...	1215	1.00	54	--	8.0	7.0	11.0	K2	<.10	.30	--	.040
14...	1230	100	50	--	7.0	8.0	11.7	K3	.40	.40	.80	.030
14...	1245	180	50	--	6.5	8.0	11.6	K3	.40	.20	.60	.020
MAR , 1983												
22...	1200	1.00	48	--	8.5	2.0	11.8	<1	.30	.50	.80	.010
22...	1205	100	50	--	6.5	3.0	11.6	<1	.10	.70	.80	.010
22...	1210	180	50	--	6.5	4.0	11.6	<1	.20	.40	.60	.020
JUN												
21...	1155	1.00	54	7.5	15.5	1.0	11.2	K7	<.10	.60	--	.010
21...	1200	100	64	7.0	8.0	1.0	11.1	K1	<.10	.20	--	.010
21...	1205	180	66	7.2	7.0	2.0	10.7	<1	.10	.30	.40	.010
SEP												
13...	1130	1.00	61	7.2	15.0	1.5	11.3	K10	<.10	.40	--	.030
13...	1135	100	62	6.8	8.5	.50	9.1	<1	.10	.30	.40	.050
13...	1140	180	63	6.7	7.5	.50	8.7	<1	.10	.30	.40	.020

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

14237900 MAYFIELD POWERPLANT TAILWATER NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'15", long 122°35'12", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005. Sampling site is at the downstream side of the powerhouse about 1.4 mi upstream from gaging station (14238000).

PERIOD OF RECORD.--Water years 1978 to current year.

REMARKS.--Water discharge obtained by routing flow from downstream gaging station; discharge values are excellent.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
DEC , 1982											
14...	1310	52	--	8.0	6.0	11.3	K1	.10	.20	.30	.020
MAR , 1983											
22...	1235	48	6.5	7.5	3.0	11.8	<1	.20	.40	.60	.010
JUN											
21...	1245	62	7.1	12.0	2.0	11.0	K1	<.10	.40	--	.020
SEP											
13...	1215	60	6.8	12.0	1.5	11.0	K17	<.10	.30	--	.020

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

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14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE¼NE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank 1.1 mi upstream from fish barrier dam, 1.4 mi downstream from Mayfield Dam, 1.5 mi upstream from Mill Creek, 2.1 mi downstream from Winston Creek, and at mile 50.6.

DRAINAGE AREA.--1,400 mi².

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only). April 1934 to current year. Published as "at Mayfield" water years 1910-11 and "near Mayfield" water years 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943, 1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft National Geodetic Vertical Datum of 1929. August 1910 to November 1911 nonrecording gage at site 2.5 mi upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--Records excellent. Flow regulated by Riffe Lake (station 14234800) at mile 65.5 and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use above station. Tacoma City Light satellite telemeter at station.

AVERAGE DISCHARGE.--49 years (water years 1935-83), 6,324 ft³/s, 61.34 in/yr, 4,582,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s Dec. 13, 1946; maximum gage height, 25.26 ft Dec. 4, 1975; minimum discharge, 37 ft³/s Apr. 16, 1962, gage height, 6.42 ft; minimum daily, 451 ft³/s Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Dec. 13, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,200 ft³/s Jan. 8, gage height, 17.56 ft; minimum, 2,870 ft³/s Aug. 22, gage height, 9.83 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3040	7570	8600	6790	7520	5390	5930	4990	5920	5720	3850	3100
2	3050	7570	9370	6790	7170	6080	5840	4960	5770	5730	3280	3100
3	3040	7620	12000	6810	7340	6330	5830	5060	5770	5730	2950	3100
4	3040	7650	21400	7910	7400	5720	5450	5160	5790	5720	3010	3100
5	3010	8100	18800	11000	7490	5390	5010	5160	5840	5730	3010	3110
6	3040	8370	18200	11700	7290	5390	5030	5160	5830	5730	3010	3100
7	3040	8400	17800	21700	7430	5380	5040	5140	5840	5700	3030	3100
8	3010	8400	16600	23800	6810	5680	5020	5140	5820	5780	3030	3100
9	3010	8370	16000	20300	6540	5990	5020	5130	5780	5770	2990	3660
10	3050	8370	14300	21900	6020	12400	5020	5140	5900	5780	2970	3660
11	3070	8400	10900	20400	5500	18200	5020	5240	5780	5400	3040	3660
12	3050	8370	10200	15500	5580	16600	5030	5310	5790	4960	3060	3710
13	3040	8400	9100	14700	6480	14400	5020	5150	5850	6020	3060	3650
14	3810	6370	9220	14500	6160	13900	5030	5130	5890	6810	3010	3650
15	4210	7950	9210	14600	5750	10800	5030	5080	5910	6530	3040	3660
16	4080	7220	9470	14500	5510	9040	5050	5070	5720	5710	3070	3680
17	4080	7370	9550	13900	6160	8280	5030	5060	5750	5710	3090	3650
18	4070	7670	10700	13100	6890	8260	5010	5080	5800	5700	3070	3640
19	4070	8120	10500	14300	6900	8110	4970	5060	5790	6010	3080	3640
20	4070	9200	10600	17800	5420	7510	4980	5000	5790	6750	3070	3630
21	4140	9200	9460	17700	5380	7380	4970	4990	5800	6760	3080	3630
22	4100	8320	8270	15600	5380	6660	4990	4980	5790	6260	2980	3630
23	4090	8400	8330	10000	5390	6050	4960	4980	5780	5780	3000	3630
24	4070	8570	8080	8660	5820	5820	4950	4990	5760	5410	3060	3640
25	4090	9200	7420	9350	5580	5510	4970	4980	5750	4670	3090	3640
26	4300	8000	7430	9310	5540	5370	4960	4980	5750	4180	3090	3640
27	4660	7100	8740	9270	5740	5420	4970	4970	5780	4030	3090	3630
28	4950	7700	6940	9250	5410	5170	4970	4970	5770	4020	3090	3630
29	6620	9270	6700	9310	---	6240	5000	4980	5740	4040	3100	3630
30	7620	8150	6870	9310	---	7840	5020	4980	5750	4040	3100	3630
31	7650	---	6830	8250	---	6800	---	5570	---	4030	3100	---
TOTAL	124150	244400	337590	408010	175660	247110	153120	157590	174000	170210	95500	105030
MEAN	4005	8147	10890	13160	6274	7971	5104	5084	5800	5491	3081	3501
MAX	7650	9200	21400	23800	7520	18200	5930	5570	5920	6810	3850	3710
MIN	3010	7100	6700	6790	5380	5170	4950	4960	5720	4020	2950	3100
AC-FT	246300	484800	669600	809300	348400	490100	303700	312600	345100	337600	189400	208300
MEAN*	2789	5177	10125	13156	7885	8816	5717	7709	6349	5419	2550	2243
CFSM*	1.99	3.70	7.23	9.40	5.63	6.30	4.08	5.51	4.54	3.87	1.82	1.60
IN.*	2.30	4.13	8.34	10.84	5.87	7.27	4.56	6.35	5.06	4.47	2.10	1.79
AC-FT*	171500	308000	622700	809100	437800	542200	340100	474100	377700	333300	156800	133500

CAL YR 1982 TOTAL 2702100 MEAN 7403 MAX 25500 MIN 2050 AC-FT 5360000 MEAN* 7372 CFSM* 5.27 IN.* 71.52 AC-FT* 5337000
WTR YR 1983 TOTAL 2392370 MEAN 6554 MAX 23800 MIN 2950 AC-FT 4745000 MEAN* 6502 CFSM* 4.64 IN.* 63.04 AC-FT* 4707000

* Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14238543 INLET TO BLUE CREEK TROUT HATCHERY PONDS NEAR TOLEDO, WA

LOCATION.--Lat 46°29'07", long 122°43'38", in SW¼NE¼ sec. 31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site is in feeder canal to trout rearing ponds.

PERIOD OF RECORD.--Water year 1980 to current year.

REMARKS.--Records for August and September 1980 published as a miscellaneous site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1982				
05...	1000	6.8	11.5	<.060
21...	0930	7.0	10.5	<.060
NOV				
02...	1030	6.8	9.5	.060
DEC				
01...	1030	6.8	9.0	.070
JAN , 1983				
11...	1010	6.8	6.5	.070
FEB				
08...	1000	6.5	6.0	.110
MAR				
16...	1200	6.8	8.5	.090
JUL				
19...	1245	6.6	12.0	.060
AUG				
17...	1030	6.5	12.5	<.060
SEP				
13...	1325	7.0	12.5	.060

14238544 BLUE CREEK HATCHERY TROUT POND NO. 1 NEAR TOLEDO, WA

LOCATION.--Lat 46°29'07", long 122°43'38", in SW¼NE¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site is in the most shoreward trout rearing pond from right bank of Cowlitz River.

PERIOD OF RECORD.--Water year 1980 to current year.

REMARKS.--Records for August and September 1980 published as a miscellaneous site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1982					
05...	1100	1.00	6.8	12.0	.070
05...	1145	7.00	7.0	11.5	<.060
21...	1000	1.00	6.9	10.5	.170
21...	1030	7.00	6.9	10.5	.160
NOV					
02...	1130	1.00	6.8	10.0	.170
02...	1200	7.00	6.8	10.0	.160
DEC					
01...	1100	1.00	6.9	8.5	.130
01...	1200	7.00	6.8	8.5	.130
JAN , 1983					
11...	1100	1.00	6.6	7.5	.140
11...	1200	7.00	6.6	7.5	.150
FEB					
08...	1100	1.00	6.8	6.5	.080
08...	1200	7.00	6.7	6.0	.140
MAR					
16...	1000	1.00	6.8	9.5	.160
16...	1100	7.00	6.8	9.0	.140
JUL					
19...	1330	1.00	6.9	13.5	<.060
19...	1345	7.00	6.6	13.0	<.060
AUG					
17...	1100	1.00	6.7	15.0	.080
17...	1230	7.00	6.6	14.5	<.060
SEP					
13...	1335	1.00	6.6	14.5	.190
13...	1350	7.00	6.8	13.0	.130

14238800 COWLITZ RIVER AT TOLEDO, WA

WATER-QUALITY RECORDS

LOCATION.--Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, Hydrologic Unit 17080003, on right bank, at State Highway 505 bridge in Toledo, and at mile 33.7

DRAINAGE AREA.--1,461 mi².

PERIOD OF RECORD.--Water years 1975, 1978 to current year (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
DEC , 1982											
14...	1155	56	6.2	8.0	6.0	11.9	210	.10	.50	.60	.020
MAR , 1983											
22...	1200	59	7.3	8.0	3.0	11.7	<1	.10	.60	.70	.020
JUN											
21...	1240	58	6.9	11.5	1.0	11.5	<1	<.10	.30	--	.020
SEP											
13...	1130	58	7.4	12.0	1.3	10.9	K5	<.10	.40	--	.020

K Results based on colony counts outside the acceptable range (non-ideal colony counts).

14240800 GREEN RIVER ABOVE BEAVER CREEK, NEAR KID VALLEY, WA

LOCATION.--Lat 46°22'55", long 122°31'21", in SE¼NW¼ sec.2, T.10 N., R.2 E., Cowlitz County, Hydrologic Unit 17080005, on right bank 0.1 mi downstream from logging bridge, 4.5 mi northeast of Kid Valley.

DRAINAGE AREA.--129 mi².

PERIOD OF RECORD.--September 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 824.60 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No regulation or diversion above station. Some quality of water data available for this station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Jan. 24, 1982, gage height, 12.11 ft from floodmark; minimum, 57 ft³/s Sept. 3, 1982, gage height, 4.15 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,210 ft³/s Dec. 3, gage height, 10.49 ft from floodmark; minimum daily, 93 ft³/s Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	794	754	303	460	663	927	465	440	445	204	242
2	125	608	787	307	455	626	899	430	389	650	198	207
3	142	508	3970	344	407	578	857	398	358	632	192	162
4	128	508	4370	690	376	560	760	376	335	519	183	155
5	117	554	2270	2480	348	542	682	407	340	470	171	148
6	148	708	1820	2920	362	524	620	402	353	440	165	132
7	288	663	1380	3300	402	542	578	412	362	394	158	138
8	260	542	1110	3370	366	702	542	402	376	362	155	130
9	292	460	948	2260	402	1210	519	398	353	335	152	160
10	260	402	829	1920	412	1620	514	362	497	307	145	246
11	219	353	721	1520	475	1290	502	319	486	284	168	358
12	195	323	689	1210	578	1100	470	311	497	288	177	242
13	177	311	741	1010	728	948	440	323	380	847	145	204
14	162	270	689	843	734	885	416	394	340	885	132	180
15	152	260	800	722	682	780	394	566	398	885	130	165
16	148	278	1720	650	696	689	371	492	348	708	125	152
17	210	576	1630	608	794	602	366	430	327	608	120	150
18	198	644	1400	572	962	548	402	455	460	524	113	229
19	165	656	1150	584	878	502	435	465	650	497	109	225
20	150	650	1030	524	864	460	465	542	638	486	107	171
21	150	572	948	475	774	435	497	638	519	412	105	150
22	402	502	878	440	787	435	497	572	465	371	103	140
23	353	440	741	455	1050	416	514	620	486	335	101	132
24	295	384	638	502	1260	398	620	626	445	323	103	130
25	267	353	566	460	1030	514	486	614	394	307	101	128
26	435	335	542	548	955	450	425	560	376	327	95	122
27	445	340	455	1040	822	416	380	515	362	278	93	130
28	587	699	416	906	741	398	366	584	348	274	97	122
29	1660	754	376	760	---	770	371	676	358	246	130	115
30	969	734	340	650	---	1210	389	620	389	228	303	111
31	787	---	319	572	---	1080	---	492	---	210	152	---
TOTAL	9993	15181	35027	32945	18800	21893	15704	14870	12469	13877	4432	5076
MEAN	322	506	1130	1063	671	706	523	480	416	448	143	169
MAX	1660	794	4370	3370	1260	1620	927	676	650	885	303	358
MIN	107	260	319	303	348	398	366	311	327	210	93	111
CFSM	2.50	3.92	8.76	8.24	5.20	5.47	4.05	3.72	3.22	3.47	1.11	1.31
IN.	2.88	4.38	10.10	9.50	5.42	6.31	4.53	4.29	3.60	4.00	1.28	1.46
AC-FT	19820	30110	69480	65350	37290	43420	31150	29490	24730	27530	8790	10070

CAL YR 1982	TOTAL	224181	MEAN	614	MAX	5660	MIN	59	CFSM	4.76	IN.	64.65	AC-FT	444700
WTR YR 1983	TOTAL	200267	MEAN	549	MAX	4370	MIN	93	CFSM	4.26	IN.	57.75	AC-FT	397200

14241100 NORTH FORK TOUTLE RIVER AT KID VALLEY, WA

LOCATION.--Lat 46°21'55", long 122°37'40", in NE¼SW¼ sec.12, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank at downstream side of bridge on State Highway 504, 0.8 mi southwest of Kid Valley, and 6.9 mi upstream from confluence with South Fork.

DRAINAGE AREA.--284 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

PERIOD OF RECORD.--June 1980 to current year. Some quality of water data available from Washington Office for this station.

GAGE.--Water-stage recorder. Datum of gage is 575.80 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s Mar. 19, 1982, gage height, 30.47 ft, gage height was affected by backwater from mudflow caused by an eruption of Mount St. Helens; minimum daily, 114 ft³/s Oct. 17, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 45.5 ft May 18, 1980 (1700 hours), from floodmarks, due to backwater from mudflow resulting from eruption of Mount St. Helens; discharge not determined. Flood reached a stage of about 45.5 ft, from floodmarks; discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,600 ft³/s Dec. 3, gage height, 27.30 ft; minimum daily, 320 ft³/s Aug. 24, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	356	1530	1940	900	1280	1710	2620	1140	1040	1070	680	645
2	393	1240	2120	940	1220	1570	2640	1120	963	1140	568	600
3	448	1200	10900	1150	1160	1480	2320	1080	940	1190	544	508
4	448	1280	8970	2850	1150	1450	1950	1080	934	1120	516	472
5	432	1460	4540	7240	1150	1500	1800	1140	898	1010	516	444
6	598	1490	2800	7060	1210	1510	1830	1180	919	970	512	359
7	898	1190	2120	7540	1290	1800	1740	1280	898	1030	516	376
8	710	1120	2040	8000	1090	2230	1480	1230	929	1040	492	379
9	670	1150	1900	5710	1300	3490	1390	1170	963	1030	500	428
10	552	1150	1740	4650	1240	4150	1340	1120	1330	1000	480	494
11	496	1050	1690	3820	1350	3070	1290	1090	1380	998	540	680
12	440	940	1830	2940	1800	2420	1220	1120	1030	1090	512	528
13	420	898	1830	2400	2270	2510	1170	1170	934	2380	450	480
14	416	795	1810	1830	2180	2320	1140	1130	922	2210	400	452
15	396	977	2120	1510	1900	2050	1090	1350	1030	2050	370	436
16	416	1120	6140	1500	1950	1780	1040	1210	984	1800	365	424
17	492	1880	5170	1530	2530	1590	1000	1120	946	1560	356	412
18	488	1670	3780	1580	2900	1510	1050	1120	1080	1450	353	518
19	456	2500	2980	1590	2600	1460	1100	1100	1200	1370	348	568
20	404	1630	2800	1490	2580	1490	1140	1120	1080	1300	343	484
21	382	1240	2600	1390	2060	1560	1220	1220	916	1230	338	452
22	988	1110	2520	1390	1950	1610	1200	1200	856	1050	335	424
23	967	1050	2180	1440	2840	1520	1240	1200	874	952	328	508
24	856	1050	1800	1520	3480	1370	1380	1200	845	880	320	524
25	984	958	1590	1350	2820	1610	1150	1240	820	862	323	512
26	1200	892	1520	1590	2650	1310	1120	1200	868	880	320	504
27	1150	934	1340	2880	2380	1200	1030	1080	940	850	326	484
28	1630	2320	[illegible]	2160	1990	1250	984	1100	904	840	329	484
29	3740	2250	[illegible]	1830	---	2860	1050	1230	928	800	378	480
30	1810	1970	1050	1620	---	3580	1110	1170	970	780	814	476
31	1650	---	980	1400	---	3000	---	1030	---	740	544	---
TOTAL	25286	40044	87110	84800	54320	61960	41834	35940	29311	36672	13716	14535
MEAN	816	1335	2810	2735	1940	1999	1394	1159	977	1183	442	485
MAX	3740	2500	10900	8000	3480	4150	2640	1350	1380	2380	814	680
MIN	356	795	980	900	1090	1200	984	1030	820	740	320	359
CFSM	2.87	4.70	9.89	9.63	6.83	7.04	4.91	4.08	3.44	4.17	1.56	1.71
IN.	3.31	5.25	11.41	11.11	7.12	8.12	5.48	4.71	3.84	4.80	1.80	1.90
AC-FT	50150	79430	172800	168200	107700	122900	82980	71290	58140	72740	27210	28830

CAL YR 1982 TOTAL 542276 MEAN 1486 MAX 15100 MIN 162 CFSM 5.23 IN. 71.03 AC-FT 1076000
WTR YR 1983 TOTAL 525528 MEAN 1440 MAX 10900 MIN 320 CFSM 5.07 IN. 68.84 AC-FT 1042000

14241490 SOUTH FORK TOUTLE RIVER AT CAMP 12, NEAR TOUTLE, WA

LOCATION.--Lat 46°19'05", long 122°40'01", in NE¼SW¼ sec.35, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank 0.9 mi downstream from Johnson Creek, 1.2 mi southeast of Toutle, and at mile 3.4.

DRAINAGE AREA.--117 mi^2.

PERIOD OF RECORD.--February 1981 to current year. (Quality of water data on file in Washington office.)

GAGE.--Water-stage recorder. Altitude of gage is 510 ft from topographic map. Prior to Dec. 22, 1982, gage located 1.6 mi upstream at different datum.

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft^3/s Dec. 3, 1982, gage height, 16.60 ft, datum then in use, from floodmarks, from rating curve extended above 8,710 ft^3/s on basis of slope-area measurement of peak flow; minimum daily, 75 ft^3/s Sept. 17, 18, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred at about 1000 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens. Another flood, on Dec. 26, 1980, reached a stage of 17.30 ft, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,500 ft^3/s Dec. 3, gage height, 16.60 ft, datum then in [illegible], from floodmarks, from rating curve extended above 8,710 ft^3/s on basis of slope-area measurement of peak flow; minimum daily, 116 ft^3/s Aug. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	1350	1700	526	620	1000	1480	450	332	658	217	429
2	152	615	1500	570	500	884	1390	419	305	860	207	482
3	164	555	5100	692	490	776	1210	399	279	716	202	342
4	143	477	4100	1370	480	716	1020	389	246	603	193	306
5	140	1110	2400	4620	470	728	872	389	254	515	192	270
6	230	1650	1700	4630	480	764	763	389	238	460	191	206
7	310	1360	1190	4790	490	1050	692	547	246	420	198	198
8	347	708	1020	4370	450	1710	635	581	222	380	196	198
9	316	437	858	2610	752	3050	624	559	206	351	196	188
10	274	352	740	2400	985	3130	624	525	515	333	180	318
11	243	324	702	1890	1270	2020	592	460	471	297	213	419
12	215	316	775	1470	1600	1500	570	419	504	333	198	284
13	194	313	835	1230	1950	1540	525	370	370	1010	170	237
14	182	299	927	1020	1530	1570	493	399	306	1100	144	201
15	173	299	2110	860	1280	1320	460	559	351	1020	138	188
16	173	488	4160	776	1380	1100	460	471	297	850	138	173
17	222	1780	3350	740	2000	908	460	429	296	680	138	174
18	200	1480	2290	764	2030	764	493	429	481	570	138	255
19	173	1270	1850	884	1620	669	525	429	704	513	131	241
20	155	1050	1760	788	1750	614	514	450	812	512	131	184
21	161	858	1620	658	1500	570	503	471	613	430	131	170
22	501	702	1500	636	1630	603	503	419	547	379	125	163
23	466	604	1260	788	2030	614	547	429	613	352	131	154
24	347	543	1050	1020	2070	570	800	399	624	332	131	156
25	419	482	946	985	1620	614	581	360	503	335	120	145
26	850	446	872	1350	1630	559	536	332	450	321	116	144
27	800	505	764	2180	1360	581	471	323	400	296	116	150
28	900	1640	692	1450	1140	658	440	314	360	301	120	143
29	2670	1720	614	1220	---	2620	429	314	342	258	262	138
30	3480	1820	581	980	---	2620	429	314	400	234	592	131
31	2120	---	537	790	---	1840	---	314	---	220	279	---
TOTAL	16863	25553	49503	49057	35107	37662	19641	13051	12287	15639	5634	6787
MEAN	544	852	1597	1582	1254	1215	655	421	410	504	182	226
MAX	3480	1820	5100	4790	2070	3130	1480	581	812	1100	592	482
MIN	140	299	537	526	450	559	429	314	206	220	116	131
AC-FT	33450	50680	98190	97300	69630	74700	38960	25890	24370	31020	11180	13460

CAL YR 1982	TOTAL	266567	MEAN	730	MAX	6070	MIN	88	AC-FT	528700
WTR YR 1983	TOTAL	286784	MEAN	786	MAX	5100	MIN	116	AC-FT	568800

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'02", long 122°50'20", in NW¼SW¼ sec.20, T.10 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 10 mi downstream from confluence of North and South Forks, 2.9 mi northwest of Silver Lake, and at mile 6.5.

DRAINAGE AREA.--496 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

PERIOD OF RECORD.--March 1981 to current year. Some quality of water data available from Washington Office for this station.

GAGE.--Water-stage recorder. Altitude of gage is 150 ft, from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s Dec. 3, 1982, gage height, 28.03 ft; minimum daily, 286 ft³/s Sept. 15, 1981, Aug. 25, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding floods occurred on May 18, 1980, from mudflows caused by the eruption of Mount St. Helens. A flood at about 1200 hours was due to mudflow from South Fork Toutle River and a larger flood at about 2100 was due to mudflow from North Fork Toutle River.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,000 ft³/s Dec. 3, gage height. 28.03 ft; minimum daily, 430 ft³/s Oct. 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	2520	4740	2130	2580	3110	4760	1580	1550	1650	879	991
2	576	2020	4030	2350	2240	2860	4850	1600	1400	2600	740	1050
3	611	1700	16100	2670	1930	2570	4260	1500	1260	2240	722	824
4	590	1820	17400	4500	1720	2300	3380	1410	1210	1720	686	776
5	597	2080	9060	15100	1650	2280	2860	1450	1170	1560	630	728
6	756	2240	8280	13600	1690	2320	2640	1490	1190	1430	630	656
7	1120	1770	5320	13700	1890	2800	2510	1690	1170	1390	610	656
8	828	1930	3970	13500	1540	3890	2380	1790	1130	1350	595	610
9	748	2110	3200	9180	2320	6310	2360	1790	1130	1300	600	662
10	748	1960	2700	8080	2600	7800	2330	1730	1620	1180	555	680
11	692	1870	2360	5720	3160	6150	2240	1550	[illegible]	1110	640	1080
12	646	1970	2400	4240	4100	5180	1950	1480	1730	1190	668	851
13	653	2030	2600	3480	4940	5060	1790	1400	1360	2970	575	740
14	604	2020	2730	3170	4100	5080	1740	1490	1210	3500	545	690
15	430	2000	4600	2840	3600	4280	1680	1970	1370	3040	515	640
16	430	2460	13600	2860	3800	3560	1630	1750	1260	2420	505	605
17	611	3970	9810	2860	4980	3040	1590	1640	1180	2060	492	585
18	583	3150	7260	2960	5460	2680	1640	1640	1530	1860	480	668
19	502	2860	5510	3320	4120	2460	1660	1590	2280	1770	472	812
20	478	2740	5340	2570	4700	2160	1760	1660	2520	1710	464	625
21	625	2370	4470	2810	3940	1980	1800	1770	1940	1550	456	570
22	1440	2180	4150	2810	4000	1990	1800	1700	1690	1400	444	515
23	1700	2090	3440	3080	5640	1920	1930	1700	1790	1300	448	605
24	1400	2120	2900	3300	5980	1790	2780	1690	1810	1200	460	650
25	1270	2140	2520	2920	4880	2010	2150	1630	1580	1230	456	656
26	1730	2190	2290	3480	5200	1900	1930	1600	1500	1260	440	656
27	1660	2480	2130	5800	4240	1860	1700	1530	1380	1160	444	662
28	2300	5410	2010	4400	3520	1910	1620	1550	1340	1160	460	656
29	8680	5170	2000	3720	---	5300	1640	1700	1360	1050	590	662
30	3790	4890	2070	3300	---	6980	1600	1680	1470	984	1260	674
31	2790	---	2120	2870	---	5440	---	1550	---	907	788	---
TOTAL	40108	76260	161110	157620	100520	108970	68990	50400	44800	51251	18249	21235
MEAN	1294	2542	5197	5085	3590	3515	2300	1626	1493	1653	589	708
MAX	8680	5410	17400	15100	5980	7800	4880	1970	2520	3500	1260	1080
MIN	430	1700	2000	2130	1540	1790	1590	1400	1130	907	440	515
AC-FT	79550	151300	319600	312600	199400	216100	136800	99970	88860	101700	36200	42120

CAL YR 1982	TOTAL	935801	MEAN	2564	MAX	24900	MIN	286	AC-FT	1856000
WTR YR 1983	TOTAL	899513	MEAN	2464	MAX	17400	MIN	430	AC-FT	1784000

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'30", long 122°54'48", in SW¼SE¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on left bank 40 ft downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi downstream from Toutle River, and at mile 17.3.

DRAINAGE AREA.--2,238 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

PERIOD OF RECORD.--December 1926 to current year.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

CORRECTIONS.--WRD WA-74-1: 1973 adjusted figures.

GAGE.--Water-stage recorder. Datum of gage is 20.20 ft National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi upstream at datum 14.93 ft higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage, and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 5.0 ft higher. Oct. 1, 1934, to May 21, 1980, water-stage recorder, on right bank at present site and datum.

REMARKS.--Records good. Flow regulated by Riffe Lake (station 14234800) at mile 65.5, and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use above station.

AVERAGE DISCHARGE.--56 years, 9,274 ft³/s, 56.27 in/yr, 6,719,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft³/s Dec. 23, 1933, gage height, 31.6 ft present datum, from rating curve extended above 80,000 ft³/s; minimum, 998 ft³/s Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 67,300 ft³/s Dec. 4, gage height, 23.2 ft; maximum gage height, 24.4 ft Jan. 8; minimum daily discharge, 3,670 ft³/s Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3820	10900	16800	8600	11700	10500	16800	7300	8210	7760	6150	4470
2	3800	10200	16100	8250	10800	11000	19600	7230	7760	9020	5250	4450
3	3850	9720	32700	9100	10000	10800	18700	7120	7510	8950	4540	4360
4	3800	9850	54100	11900	10300	9550	16000	7060	7300	8460	4180	4270
5	3780	10500	33300	33100	9590	9400	12800	7090	7230	8240	4620	4170
6	3840	12000	27500	34000	9700	9620	11100	7200	7230	8100	4650	4000
7	3960	12200	24700	39900	10000	10200	9810	7510	7160	7960	4000	3910
8	4040	11200	21200	44200	9930	13600	8760	8100	7160	8070	3670	3690
9	4040	10600	19900	35700	10600	18400	8350	8210	7090	7930	3810	4150
10	4040	10200	17600	33200	11700	21800	8360	8000	7860	7930	4050	4390
11	3720	9980	12100	31800	12400	27800	8410	7510	7860	7580	4130	5280
12	3850	10000	12300	23100	13000	26100	8460	7720	7930	6720	4150	5280
13	3790	9980	12900	19900	15300	21000	8500	7260	7620	8020	4080	5070
14	4140	9520	12700	19200	13800	21800	8280	7340	7620	9920	4030	4860
15	5030	9150	16100	16600	11500	17500	8000	7820	7900	10100	3910	4780
16	4930	8650	29700	18000	11000	14200	7820	7620	7300	8880	3930	4700
17	5080	12800	25200	17400	13900	13200	7720	7230	7160	8320	3960	4690
18	5150	15400	22900	16000	15600	13600	7760	7200	7480	7960	3930	4680
19	5080	15100	20500	16700	14200	13400	7680	7060	8350	7900	3930	4660
20	5030	13900	20100	20100	12100	12300	7540	6950	8650	9020	3930	4650
21	5060	12600	18900	19800	10400	11600	7510	7090	8000	8760	3910	4650
22	6030	12200	17200	19400	11500	10400	7480	6920	7650	8500	3880	4750
23	5990	12500	15300	15200	13400	9250	7650	6820	7620	7790	3790	4850
24	5640	12100	13000	12500	14000	8240	9060	6880	7790	7580	3810	4960
25	5450	13000	12300	13700	11600	8320	8320	6850	7440	6880	3840	4980
26	6370	13900	11900	14600	11500	7820	7930	6760	7300	6270	3810	5010
27	6840	13500	13000	17800	11300	7860	7650	6620	7340	5910	3860	4830
28	7580	15100	11100	16100	10800	7900	7400	6620	7230	5940	3940	4540
29	16700	14600	9950	15000	---	12600	7370	6850	7340	6500	4100	4650
30	13100	15800	9800	14000	---	19100	7340	6920	7580	7230	5470	4750
31	11400	---	9250	13200	---	17400	---	6920	---	6720	4490	---
TOTAL	174940	357150	590100	630050	331620	426360	288160	223780	227670	244920	129700	138480
MEAN	5643	11910	19040	20320	11840	13750	9605	7219	7589	7901	4184	4616
MAX	16700	15800	54100	44200	15600	27800	19600	8210	8650	10100	6150	5280
MIN	3720	8650	9250	8250	9590	7820	7340	6620	7090	5910	3670	3690
AC-FT	347000	708400	1170000	1250000	657800	845700	571600	443900	451600	485800	257300	274700
MEAN†	4426	8934	18270	20330	13450	14600	10220	9846	8138	7831	3654	3359
CFSM†	1.98	3.99	8.16	9.08	6.01	6.52	4.57	4.40	3.64	3.50	1.63	1.50
IN.†	2.28	4.46	9.41	10.47	6.26	7.52	5.10	5.07	4.06	4.04	1.88	1.67
AC-FT†	272162	531616	1123141	1249791	747247	897734	608020	605448	484248	481503	224693	199866

CAL YR 1982 TOTAL 4066370 MEAN 11140 MAX 54100 MIN 2560 AC-FT 8066000 MEAN† 11110 CFSM† 4.96 IN.† 67.40 AC-FT† 8043000
WTR YR 1983 TOTAL 3762930 MEAN 10310 MAX 54100 MIN 3670 AC-FT 7464000 MEAN† 10260 CFSM† 4.58 IN.† 62.23 AC-FT† 7426000

† Adjusted for change in contents in Riffe Lake and Mayfield Reservoirs.

14244200 COWLITZ RIVER AT KELSO, WA
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 46°08'44", long 122°54'47", near center of SE¼ sec.27, T.8 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at Main Street bridge between Kelso and West Kelso, 3.6 mi upstream from Cowemen River, and at mile 4.9.

DRAINAGE AREA.--2,349 mi².

PERIOD OF RECORD.--Water years 1960-1966, 1971-75, 1977 to current year. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007 and miscellaneous quality of water data are available from the Washington Office.

REMARKS.--Water discharges obtained by routing flows from upstream station (see sta 14243000). Station is tidally-influenced, and discharge values are poor.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1982 22...	1020	5300	114	E7.6	11.0	32	10.8	99	K32	K110	32
NOV 29...	1230	15000	101	E7.7	8.0	340	11.2	97	K110	880	29
MAR , 1983 01...	1240	10000	124	E7.7	7.5	200	11.2	93	K26	K130	33
MAY 12...	0950	7960	130	7.0	11.5	75	11.2	102	<4	120	34
JUL 13...	1120	7100	130	7.0	14.0	180	10.8	105	54	400	34
SEP 13...	1230	4800	119	7.0	14.5	28	10.6	103	K20	K40	37

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT , 1982 22...	6	9.5	2.0	7.7	34	.6	.90	26	15	9.4	.10
NOV 29...	5	8.6	1.9	6.9	33	.6	.90	24	17	6.4	.10
MAR , 1983 01...	9	9.5	2.2	8.7	36	.7	1.1	24	17	7.9	.10
MAY 12...	6	10	2.2	9.5	37	.7	1.0	28	20	8.3	<.10
JUL 13...	6	10	2.2	9.2	36	.7	1.0	28	19	8.0	.10
SEP 13...	9	11	2.2	8.0	33	.6	.90	28	18	7.7	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
OCT , 1982 22...	13	69	73	.09	1070	13	--	.060	1.1	.480
NOV 29...	13	71	69	.10	3090	--	.29	<.060	.70	.880
MAR , 1983 01...	14	77	75	.10	2140	596	.36	<.060	.50	.370
MAY 12...	15	80	83	.11	1700	245	.10	<.060	.60	.370
JUL 13...	14	79	81	.11	1580	715	<.10	.060	.90	.180
SEP 13...	14	77	79	.10	1040	206	<.10	.060	.30	.090

E Estimated value based on values reported by Denver Central Laboratory.
K Results based on colony counts outside the acceptable range (non-ideal colony counts).

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
OCT , 1982											
22...	--	<.010	30	--	--	--	--	--	--	--	31
NOV											
29...	.020	<.010	100	<1	8	<.5	<1	<1	<3	8	86
MAR , 1983											
01...	.020	.020	--	--	--	--	--	--	--	--	--
MAY											
12...	.030	.010	50	<1	10	<.5	<1	<1	<3	3	69
JUL											
13...	.010	.040	40	<1	9	<.5	<1	<1	<3	6	42
SEP											
13...	<.010	<.010	--	--	--	--	--	--	--	--	--

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1982											
22...	5	--	34	.1	--	--	--	--	--	--	<3
NOV											
29...	2	8	42	.3	<10	3	<1	<1	35	<6	20
MAR , 1983											
01...	--	--	--	--	--	--	--	--	--	--	--
MAY											
12...	1	12	22	<.1	<10	2	<1	<1	44	<6	5
JUL											
13...	<1	15	25	.2	<10	<1	<1	<1	41	<6	7
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER-ATURE (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	NUMBER OF SAM-PLING POINTS	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT							
22...	1300	11.0	6100	5	767	12600	--
NOV							
29...	1145	8.0	15000	4	4680	190000	--
DEC							
28...	1400	6.0	12900	5	549	19100	61
MAR							
01...	1320	7.5	11000	5	1760	52300	47
13...	1200	8.5	21200	--	2600	149000	32
13...	1410	8.5	21200	--	2940	168000	33
13...	1505	8.5	21200	5	3060	175000	62
13...	1530	8.5	21200	--	2200	126000	48
14...	1110	8.5	21900	--	3100	183000	38
14...	1250	8.5	21900	--	3060	181000	--
14...	1350	8.5	21900	--	4370	258000	--
14...	1510	8.5	21900	5	2660	157000	51
14...	1545	8.5	21900	--	3900	231000	--
MAY							
12...	1130	11.5	8000	5	2170	46900	32
JUL							
13...	1150	14.0	7420	5	1670	33500	32
SEP							
13...	1255	14.5	5120	5	583	8060	30

COWLITZ RIVER BASIN

14245000 COWEMAN RIVER NEAR KELSO, WA

LOCATION.--Lat 45°07'42", long 122°50'14", in SE¼SW¼ sec.32, T.8 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 3.4 mi southeast of Kelso High School, 3.9 mi downstream from Goble Creek, and at mile 7.5.

DRAINAGE AREA.--119 mi^2.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--33 years, 427 ft^3/s, 48.73 in/yr, 309,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,940 ft^3/s Dec. 2, 1977, gage height, 14.67 ft, from rating curve extended above 4,900 ft^3/s on basis of slope-area measurement at gage height 12.6 ft; minimum, 22 ft^3/s Sept. 22, 1951; minimum gage height, 2.54 ft Aug. 14, 15, 1975.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1950, reached a stage of 12.8 ft from floodmarks, discharge, 7,730 ft^3/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 3	2200	*5,670	*10.67	Jan. 6	unknown	unknown	unknown
Dec. 16	0400	3,420	8.17				

Minimum discharge, 47 ft^3/s Oct. 1, 2, 6, gage height, 2.85 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	329	1100	348	456	776	1100	195	142	350	105	184
2	54	252	992	360	415	696	1220	188	141	524	102	218
3	61	207	3350	446	373	602	1160	182	126	394	98	158
4	53	223	3660	1360	343	527	915	173	113	305	93	141
5	49	332	1760	3190	317	495	737	166	104	255	91	123
6	57	587	1230	3580	342	477	613	165	99	216	88	106
7	183	639	868	3400	442	550	537	188	93	198	85	103
8	163	447	683	3430	396	789	468	235	89	188	84	98
9	128	326	576	2560	776	1110	455	275	86	181	85	99
10	97	261	491	2540	1110	1380	495	252	174	153	79	179
11	78	218	420	1970	1120	1110	508	221	177	139	94	252
12	67	188	419	1370	1090	897	466	203	152	152	101	174
13	61	173	428	1020	1330	835	425	189	126	480	80	143
14	57	152	514	810	1250	1040	388	185	111	538	74	124
15	54	141	1190	685	982	1060	355	262	142	419	71	113
16	53	210	2770	587	850	851	327	220	120	347	70	103
17	87	642	2820	522	1050	685	307	202	119	289	69	100
18	91	754	2490	486	1220	563	292	190	185	247	68	120
19	69	832	1830	491	1110	476	276	177	270	246	67	132
20	61	857	2000	443	1050	420	266	167	232	242	66	102
21	59	670	1700	398	937	384	254	160	201	206	66	95
22	149	506	1490	382	895	375	242	151	169	181	64	91
23	169	39[illegible]	1120	426	1100	348	255	142	249	164	64	86
24	120	332	839	616	1200	320	412	133	331	157	67	86
25	[illegible]	284	708	586	1100	309	290	126	273	154	66	83
26	247	255	670	661	1270	291	271	120	225	146	63	82
27	226	251	553	1020	1140	299	249	116	192	146	63	80
28	309	714	494	923	901	358	230	111	166	154	72	81
29	1680	1010	451	721	---	1460	220	103	162	128	136	76
30	593	1060	414	630	---	2140	205	103	176	117	352	77
31	352	---	382	515	---	1470	---	128	---	109	149	---
TOTAL	5579	13244	38412	36476	24565	23093	13938	5428	4945	7525	2832	3609
MEAN	180	441	1239	1177	877	745	465	175	165	243	91.4	120
MAX	1680	1060	3660	3580	1330	2140	1220	275	331	538	352	252
MIN	48	141	382	348	317	291	205	103	86	109	63	76
CFSM	1.51	3.71	10.4	9.89	7.37	6.26	3.91	1.47	1.39	2.04	.77	1.01
IN.	1.74	4.14	12.01	11.40	7.68	7.22	4.36	1.70	1.55	2.35	.89	1.13
AC-FT	11070	26270	76190	72350	48720	45800	27650	10770	9810	14930	5620	7160

CAL YR 1982 TOTAL 180810 MEAN 495 MAX 5150 MIN 29 CFSM 4.16 IN. 56.52 AC-FT 358600
WTR YR 1983 TOTAL 179646 MEAN 492 MAX 3660 MIN 48 CFSM 4.13 IN. 56.16 AC-FT 356300

Discharge at ungaged sites

Monthly records for the following sites have been computed by routing methods described in USGS Circular 550. Circular 550 contains monthly records for these sites for water years 1928-65, including monthly flows adjusted for major upstream storage. Figures given here represent unadjusted flows, and are rated fair. Adjusted records are available from the district office, Portland, Oregon.

14144700 COLUMBIA RIVER AT VANCOUVER, WA.--Lat 45°37'15", long 122°40'20", in NE¼NW¼ sec.24, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, 5.0 mi upstream from Willamette River, and at mile 106.5. Drainage area, 241,000 mi², approximately. Records available, monthly discharge October 1927 to current year. Daily discharge for October 1963 to September 1969, published in annual data reports for Oregon, 1965-67, 1969.

14222870 COLUMBIA RIVER AT SAINT HELENS, OR.--Lat 45°51'58", long 122°47'00", Columbia County, Hydrologic Unit 17080003, center of channel at intersection of Township (4/5N) line and Oregon-Washington boundary, 0.6 mi east of Saint Helens and at mile 86.0. Drainage area, 253,900 mi², approximately. Records available, monthly discharge October 1927 to current year.

14245300 COLUMBIA RIVER AT LONGVIEW, WA.--Lat 46°06'22", long 122°57'14", Cowlitz County, Hydrologic Unit 17080003, at Longview Bridge, 1.0 mi south of Longview, 2.0 mi downstream from Cowlitz River, and at mile 66.0. Drainage area, 256,700 mi², approximately. Records available, monthly discharge October 1927 to current year.

14280000 COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OR.--Lat 46°15', long 124°05', Clatsop County, Hydrologic Unit 17080006, center of channel at river mouth, due north from original end of south jetty, 12.3 mi northwest of Astoria, and at mile 0. Drainage area, 258,000 mi², approximately. Records available, monthly discharge October 1927 to current year.

MONTHLY AND ANNUAL MEAN DISCHARGE IN CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	ANNUAL
14144700 COLUMBIA RIVER AT VANCOUVER, WA												
131,600	160,000	177,600	219,600	260,100	372,400	284,700	331,100	311,500	219,000	173,900	128,600	232,000
14222870 COLUMBIA RIVER AT SAINT HELENS, OR												
157,200	203,400	290,900	311,700	361,900	456,500	341,200	360,200	331,400	239,200	186,900	147,800	283,200
14245300 COLUMBIA RIVER AT LONGVIEW, WA												
165,100	218,100	317,400	338,800	379,000	474,500	353,100	367.800	340,200	248,900	191,500	153,300	296,500
14280000 COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OR												
166,900	226,500	336,600	357,100	388,000	487,900	369,900	365,000	354,100	253,700	195,600	157,200	304,900

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1983

Station no.	Station name	Location	Drainage area (mi²)	Period of record	Annual maximum Date	Annual maximum Gage height (ft)	Annual maximum Discharge (ft³/s)
		Quillayute River basin					
12042900	GRADER CREEK NEAR FORKS, WA	Lat 47°55'40", long 124°24'25", in SW1/4 sec.17, T.28 N., R.13 W., Clallam County, at U.S. Highway 101, 2 mi southwest of Forks.	1.67	1950-	2-12-83	21.10	351
		McAllister Creek basin					
12081350	EATON CREEK NEAR YELM, WA	Lat 46°58'05", long 122°43'30", in S1/2 sec.7, T.17 N., R.1 E., Thurston County, at county road, 6 mi northwest of Yelm.	2.28	1960-	12- 3-82	5.23	31
		Lake Washington basin					
12115300	GREEN POINT CREEK NEAR CEDAR FALLS, WA	Lat 47°23'20", long 121°40'30", in SE1/4 sec.17, T.22 N., R.9 E., King County, at road crossing near mouth, 5 mi southeast of Cedar Falls.	.89	1957-	1- 8-83	12.81	73
		Skagit River basin					
12189400	SAUK RIVER TRIBUTARY NEAR DARRINGTON, WA	Lat 48°20'30", long 121°33'00", in SE1/2 sec.18, T.33 N., R.10 E., Skagit County, at Darrington-Concrete Road, 6.5 mi northeast of Darrington.	1.30	1951-70, 1978-	12- 3-82	79.20	184
		Nooksack River basin					
12204400	NOOKSACK RIVER TRIBUTARY NEAR GLACIER, WA	Lat 48°54'30", long 121°48'20", in SW1/4 sec.32, (unsurveyed), T.40 N., R.8 E., Whatcom County, at State Highway 542, 6.5 mi east of Glacier.	1.15	1956-60, 1962-	7-13-83	15.83	43
12212800	TENMILE CREEK TRIBUTARY NO. 2 NEAR BELLINGHAM, WA	Lat 48°50'35", long 122°24'30", 0.2 mi north from center of sec.27, T.39 N., R.3 E., Whatcom County, at Sterry Road, 2.8 mi northwest of Noon, and 7 mi northeast of Bellingham.	.24	1956-	1-10-83	10.14	67
		Pend Oreille River basin					
12396000	CALISPELL CREEK NEAR DALKENA, WA	Lat 48°14'40", long 117°20'26", in NE¼SW¼ sec.26, T.32 N., R.43 E., Pend Oreille County, 2.4 mi upstream from Calispell Lake, and 4.8 mi west of Dalkena.	68.3	1950-73‡, 1974-83	3-10-83	7.59	580
12396100	WINCHESTER CREEK NEAR CUSICK, WA	Lat 48°16'52", long 117°21'44", in NW¼ sec.15, T.32 N., R.43 E., Pend Oreille County, at county road around Calispell Lake, and 4.8 mi southwest of Cusick.	16.8	1954-83	3-10-83	11.26	66
		Methow River basin					
12447380	PINE CREEK NEAR MAZAMA, WA	Lat 48°34'48", long 120°37'33", in NE¼ sec.32, T.36 N., R.18 E., Okanogen County, at State Highway 20, 10 mi west of Mazama.	4.63	1966-83	5-30-83	19.68	204
		Wenatchee River basin					
12461200	EAST BRANCH MISSION CREEK TRIBUTARY NEAR CASHMERE, WA	Lat 47°22'50", long 120°29'20", in SW¼ sec.20, T.22 N., R.19 E., Chelan County, at U.S. Forest Service road, 9.7 mi south of Cashmere.	2.49	1955-83	3-11-83	11.95	15
		Yakima River basin					
12491700	HAUSE CREEK NEAR RIMROCK, WA	Lat 46°40'33", long 121°04'49", in NE¼ sec.28. T.14 N., R.14 E., Yakima County, at State Highway 14, 0.1 mi west of Tieton Ranger Station, and 2.5 mi east of Rimrock.	3.91	1955-83	3-10-83	6.61	30
		Palouse River basin					
13349300	PALOUSE RIVER TRIBUTARY AT COLFAX, WA	Lat 46°53'22", long 117°22'59", in SE¼SW¼ sec.10, T.16 N., R.43 E., Whitman County, at U.S. Highway 295, about 1 mi west of Colfax.	2.10	1955-83	1- 6-83	17.33	24
		Klickitat River basin					
14112200	LITTLE KLICKITAT RIVER TRIBUTARY NEAR GOLDENDALE, WA	Lat 45°50'15", long 120°47'50", in NW¼ sec.15, T.4 N., R.16 E., Klickitat County, at county road, 1.5 mi northeast of Goldendale.	.71	1960-83	3-30-83	11.13	59
		Cowlitz River basin					
14226900	SKATE CREEK TRIBUTARY NO. 2 NEAR PACKWOOD, WA	Lat 46°40'30", long 121°45'10", in NE1/4 sec.26, T.14 N., R.8 E., Lewis County, at Skate Creek Road, 6 mi northwest of Packwood.	1.82	1959-75, 1978-	12- 3-82	11.42	120

‡ Operated as a continuous-record gaging station.

AVAILABLE

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Willapa River basin				
12011500 Willapa River	Willapa Bay	Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, 0.2 mi downstream from bridge on State Highway 6, 0.5 mi west of Lebam, and at mile 33.9.	41.4	1948-71†, a1972-74, 1978-82	11- 9-82 1-26-83 3-31-83 5-11-83 7- 7-83	156 606 811 85.2 33.3
		Chehalis River basin				
12020565 Chehalis River	Grays Harbor	Lat 46°37'54", long 123°14'51", in NW¼NE¼ sec.12, T.13 N., R.5 W., Lewis County, at Chandler Road bridge, 1.0 mi west of Rainbow Falls State Park bridge, 1.3 mi east of Doty, and at mile 97.8.	---	1978-82	11- 9-82 1-26-83 4- 6-83 5-11-83 9-29-83	670 1,780 1,140 356 73.5
12022250 Chehalis River	.....do......	Lat 46°37'40", long 123°03'35", in SW¼NE¼ sec.9, T.13 N., R.3 W., Lewis County, at State Highway 6 bridge at Adna, and at mile 81.3.	383	1972, 1975-82	7- 7-83 9-16-83	294 150
12024100 South Fork Newaukum River	Newaukum River	Lat 46°36'14", long 122°51'15", in NW¼NE¼ sec.19, T.13 N., R.1 W., Lewis County, at county bridge 0.3 mi northeast of Forest, 0.2 mi upstream from North Fork Newaukum River, and at mile 11.1.	66.2	1976-82	6-29-83 9-16-83	82.8 70.6
12024500 North Fork Newaukum River	.....do.....	Lat 46°39'17", long 122°46'45", in NW¼SW¼ sec.35, T.14 N., R.1 W., Lewis County, at county road 1.4 mi upstream from Lucas Creek, 5.5 mi northeast of Forest, and at mile 6.6.	31.5	1942-43, 1944-45†, 1957-66†, 1967, 1976-82	6-29-83 9-16-83	30.1 18.4
12029500 Garrard Creek	Chehalis River	Lat 46°48'34", long 123°16'15", in SW¼SE¼ sec. 2, T.15 N., R.5 W., Grays Harbor County, at county road 2.8 mi southwest of Oakville, and at mile 2.6.	26.5	1942-43, 1944-45†, 1958,1961, 1976-82	7- 6-83 9-15-83	10.6 6.29
12032500 Cloquallum Creek	.....do.....	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, 10 ft downstream from State Highway 12 bridge, 1.7 mi east of Elma, 1.9 mi downstream from Wildcat Creek, and at mile 1.9.	64.9	1942-43†, 1944-72†, a1973-79, 1974-82	6- 7-83 9-15-83	53.6 53.3
12038005 Wishkah River	.....do.....	Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor County, at Wishkah Road, 0.1 mi upstream from East Fork, 1.0 mi north of Aberdeen Gardens, and at mile 12.3.	59.9	1956, 1962-64, 1966, 1976-82	6- 7-83 9-14-83	73.6 120
		Hoquiam River basin				
12038660 East Fork Hoquiam River	Hoquiam River	Lat 47°03'32", long 123°50'04", in NW¼SW¼ sec.8, T.18 N., R.9 W., Grays Harbor County, 0.2 mi upstream from Berryman Creek, 3.0 mi west of Aberdeen Gardens, and at mile 7.3.	25.8	1942-43, 1976-82	6- 7-83 9-14-83	33.0 41.8
		Humptulips River basin				
12039000 Humptulips River	Grays Harbor	Lat 47°13'42", long 123°56'23", in NE¼NE¼ sec.17, T.20 N., R.10 W., Grays Harbor County, on right bank, 1.0 mi southeast of Humptulips, 2.3 mi upstream from Stevens Creek, 3.3 mi downstream from confluence of East and West Forks, and at mile 24.8.	130	1933-35†, 1942, 1942-79†, 1980-82	12- 2-82 1-17-83 3- 7-83 5- 2-83 7- 5-83	2,920 1,400 2,200 456 625
		Quillayute Rivar basin				
12043000 Calawah River	Quillayute River	Lat 47°57'37", long 124°23'30", in NW¼SW¼ sec.4, T.28 N., R.13 W., Clallam County, 30 ft downstream from U.S. Highway 101 bridge, 0.8 mi northwest of Forks, and at mile 6.6.	129	1898-1902† 1976-80†	7-13-83 9-13-83	4,350 309
		Hamma Hamma River basin				
12054500 Hamma Hamma River	Hood Canal	Lat 47°35'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, 0.3 mi downstream from Watson Creek, 4.6 mi northwest of Eldon, and at mile 6.2.	51.3	1952-71†, a1972-79, 1977, 1981,1982	6- 8-83 9-14-83	565 127
		Skokomish River basin				
12062500 Purdy Creek	Skokomish River	Lat 47°17'56", long 123°10'50", in NW¼NW¼ sec.22, T.21 N., R.4 W., Mason County, 0.2 mi upstream from State Fish Hatchery, 5.5 mi southwest of Union, and at mile 1.4.	---	1954-60†, 1981,1982	6- 8-83 9-13-83	23.2 15.9

† Operated as a continuous-record gaging station.
a Operated as a crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1983--Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Deschutes River basin				
12079004 Deschutes River	Budd Inlet	Lat 46°52'23", long 122°43'44", in SE¼NW¼ sec.18, T.16 N., R.1 E., Thurston County, at State Highway 507, 2.2 mi southwest of Rainier, and at mile 21.6.	101	1980-82	10- 6-82	36.6
					12- 8-82	436
					1-28-83	779
					5-17-83	137
					7-26-83	108
					9-30-83	51.0
12080010 Deschutes River	.....do.....	Lat 47°00'42", long 122°54'07", in NW¼ Land Grant 60, T.18 N., R.2 W., Thurston County, at "E" Avenue Bridge in Tumwater, 0.2 mi upstream from Capitol Boulevard, and at mile 2.4.	162	1971-72, 1975, 1977-82	10- 6-82	99.8
					12- 8-82	598
					1-28-83	1,060
					5-17-83	246
					7-26-83	173
					9-30-83	118
		Puyallup River basin				
12093900 Carbon River	Puyallup River	Lat 47°00'47", long 122°00'42", in SW¼SW¼ sec.26, T.18 N., R.6 E., Pierce County, at Fairfax, 0.7 mi downstream from Evans Creek, and at mile 17.7.	76.2	1906, 1911-12‡, 1966-78‡, 1979-82	10-18-82	174
					12-15-82	266
					2- 8-83	160
					4- 5-83	223
					6-10-83	657
12096500 Puyallup River	Commencement Bay	Lat 47°11'07", long 122°13'42", on line between sec.25, T.20 N., R.4 E., and sec.30, T.20 N., R.5 E., Pierce County, at State Highway 162, 1.0 mi north of Alderton, 1.0 mi south of Sumner, and at mile 12.2.	438	1914, 1915-27‡, 1944-57, 1982	6-13-83	1,420
					8-12-83	1,250
12101110 White River	Puyallup River	Lat 47°12'15", long 122°14'10", in NW¼SW¼ sec.24, T.20 N., R.4 E., Pierce County, at Main Street bridge on northwest edge of Sumner, and at mile 0.7.	494	1972, 1977-82	10- 7-82	550
					12-17-82	2,580
					2- 9-83	1,420
					4- 1-83	1,010
					6-13-83	1,900
					8-12-83	1,650
		Snohomish River basin				
Tye River	South Fork Skykomish River	Lat 47°42'38", long 121°09'22", in SW¼SW¼ sec.29, T.26 N., R.13 E., King County, Snoqualmie National Forest, at road bridge 0.2 mi above Suprise Creek, at Scenic.	7.6	1967‡,	1-13-83	128
					2-16-83	43.9
					3-15-83	94.2
					4-14-83	58.0
					5-16-83	131
					6-20-83	109
					7-15-83	158
					8-14-83	30.1
					9-14-83	34.2
Tye River	.....do.....	Lat 47°42'57", long 121°08'04", in SE¼NE¼ sec.30, T.26 N., R.13 E., King County, Snoqualmie National Forest, 0.8 mi upstream from Deception Creek confluence, and 0.8 mi northwest of Scenic.	25.0	1911	11- 3-82	68.6
Tye River	.....do.....	Lat 47°42'15", long 121°17'50", in NW¼NW¼ sec.32, T.26 N., R.12 E., King County, Snoqualmie National Forest, 1,000 ft upstream from Foss River, and 3 mi east of Skykomish.	79.8	1929-31‡, 1946‡, 1947‡	10-13-82	202
West Fork Miller River	.....do.....	Lat 47°40'17", long 121°23'28", in NE¼NE¼ sec.16, T.25 N., R.11 E., King County, Snoqualmie National Forest, at road bridge 0.3 mi upstream from East Fork Miller River, and 3.3 mi southwest of Skykomish.	13.8	1911‡	9-14-83	44.5
12137230 Sultan River	Skykomish River	Lat 47°58'47", long 121°34'25", in SE¼SW¼ sec.19, T.29 N., R.10 E., Snohomish County, at bridge 0.4 mi downstream from Elk Creek, 13.6 mi northeast of Sultan, and at mile 22.4.	---	1977-82	12- 5-82	102
					1-21-83	122
					6- 2-83	191
					8- 7-83	53.0
					9-15-83	88.8
12137290 South Fork Sultan River	.....do.....	Lat 47°56'52", long 121°37'33", in NE¼NE¼ sec.3, T.28 N., R.9 E., Snohomish County, at bridge 10.5 mi northeast of Sultan, and at mile 2.3.	---	1977-82	11- 3-82	82.0
					1-21-83	77.6
					3-30-83	184
					6- 2-83	104
					8- 7-83	26.1
					9-15-83	52.2
12141100 Skykomish River	Snohomish River	Lat 47°51'08", long 121°57'29", in NE¼NE¼ sec.12, T.27 N., R.6 E., Snohomish County, at State Highway 203 bridge, at south city limits of Monroe.	834	1922, 1951, 1955, 1958-67, 1959, 1967-82 1962-82	12-14-82	6,540
					1-20-83	5,130
					3-31-83	6,800
					5-31-83	11,100
					8- 5-83	1,960

‡ Operated as a continuous-record gaging station.

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Discharge measurements made at miscellaneous sites during water year 1983--Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Snohomish River basin--Continued				
12143100 North Fork Snoqualmie River	Snoqualmie River	Lat 47°31'19", long 121°46'07", in SE¼NW¼ sec.34, T.24 N., R.8 E., King County, at highway bridge 2 mi northeast of North Bend, and 0.3 mi upstream from confluence with Middle Fork Snoqualmie River.	103	1907-26, 1929-39, 1981,1982	10-13-82 5-26-83 8-26-83	373 917 138
12145000 Tokul Creek	Snoqualmie River	Lat 47°33'13", long 121°50'09", in SW¼NW¼ sec.19, T.24 N., R.8 E., King County, 200 ft upstream from fish hatchery diversion, 600 ft downstream from State Highway 522, and 1.8 mi northeast of Snoqualmie.	32.2	1907-14†, 1926,1927, 1929-31†, 1945,1957, a1959-61,	10-13-82 12-15-82 1-31-83 5- 2-83 8-29-83	96.2 195 115 52.9 40.8
Snoqualmie River	Snohomish River	Lat 47°48'14", long 122°00'07", in NE¼NW¼ sec.26, T.27 N., R.6 E., Snohomish County, at county bridge 4.5 mi southeast of Monroe, 4.5 mi north of Duvall, and 1.5 mi upstream from confluence with Skykomish River.	---	1981,1982	8- 5-83 9-26-83	1,560 1,400
12155400 Pilchuck River	.....do.....	Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, at bridge on U.S. Highway 2 at east city limits of Snohomish, and at mile 1.9.	132	1971-74, 1978-82	12- 8-82 1-20-83 3-29-83 6- 3-83 8- 6-83 9-26-83	668 555 293 205 138 121
		Stillaguamish River basin				
Jim Creek	South Fork Stillaguamish River	Lat 48°11'02", long 122°04'30", in NE¼SE¼ sec.7, T.31 N., R.6 E., Snohomish County, at Jordan Road bridge 2.[illegible] mi southeast of Arlington, and 300 ft upstream from confluence with mouth.	46.8	1981,1982	6-29-83 9- 8-83	130 57.6
12164510 South Fork Stillaguamish River	Stillaguamish River	Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, at State Highway 530 bridge near northeast corner of Arlington, 0.4 mi upstream from the confluence with the North Fork Stillaguamish River, and at mile 18.2.	255	1966, 1973-75, 1978-82	11- 6-82 1-13-83 3-22-83 5-10-83 6-29-83 9- 9-83	1,740 3,050 860 1,320 999 535
12167700 Stillaguamish River	Port Susan	Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.3 E., Snohomish County, at Interstate 5, 1.5 mi east of Silvana, 6.7 mi downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1.	557	1975†, 1976-82	11-16-82 1-13-83 3-22-83 5-10-83 6-29-83 9- 8-83	2,990 2,760 2,110 2,710 2,290 1,250
		Samish River basin				
12201500 Samish River	Samish Bay	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, 500 ft downstream from bridge on old U.S. Highway 99, 0.5 mi downstream from Friday Creek, 5.0 mi north of Burlington, and at mile 10.3.	87.8	1944-71†, a1972-79, 1972-74, 1976-82	10-16-82 5- 5-83 7-13-83 8-23-83 9-27-83	33.0 116 160 36.3 64.4
		Minor basins between Samish and Nooksack Rivers				
12203000 Whatcom Creek	Bellingham Bay	Lat 48°45'10",long 122°25'40",in NW¼SE¼ sec.28, T.38 N., R.3 E., Whatcom County, in Whatcom Falls Park, 0.7 mi downstream from Lake Whatcom, and 2 mi east of Bellingham.	56.0	1910-14†, 1939-46†, 1973-75, 1981,1982	5-25-83 7-15-83	0.93 211
		Nooksack River basin				
Wells Creek	North Fork Nooksack River	Lat 47°52'03", long 121°45'46", T.39 N., R.8 E., Whatcom County, Mt. Baker National Forest, 150 ft upstream from U.S. Forest Service Road 33, 300 ft upstream from Bar Creek confluence, 500 ft downstream from falls, and 8.6 mi southwest of Glacier.	---	---	8-17-83	52.4
Bar Creek	Wells Creek	Lat 47°52'04", long 121°46'00", T.39 N., R.8 E., Whatcom County, Mt. Baker National Forest, 300 ft upstream from Wells Creek confluence, and 8.6 mi southwest of Glacier.	---	---	8-17-83	191
North Fork Nooksack River	Nooksack River	Lat 48°50'20", long 122°09'06", in NW¼SW¼ sec.27, T.39 N., R.5 E., Whatcom County, at county bridge (Mosquito Lake Road) 3.3 mi northeast of Deming, and 0.4 mi upstream from confluence with Middle Fork Nooksack River.	293	1948,1954, 1981,1982	10-15-82 5-25-83	511 3,170

† Operated as a continuous-record gaging station.
a Operated as a crest-stage gage.

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Discharge measurements made at miscellaneous sites during water year 1983--Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Discharge (ft³/s)
		Nooksack River basin--Continued				
Clearwater Creek	Middle Fork Nooksack River	Lat 48°46'30", long 122°02'36", in NW¼NW¼ sec.21, T.38 N., R.6 E., Whatcom County, at county bridge (Mosquito Lake Road) 6.5 mi southeast of Van Zandt, and 3.4 mi northeast of Deming.	21.1	1954-55, 1979-82	10-15-82 11-17-82 12-17-82 1-17-83 2-17-83 3-16-83 4-15-83 5-15-83 6-22-83 8-16-83 9-16-83	44.6 125 185 133 171 105 57.3 126 114 25.1 66.5
12208000 Middle Fork Nooksack River	North Fork Nooksack River	Lat 48°47'06", long 122°06'39", in SW¼NW¼ sec.13, T.38 N., R.5 E., Whatcom County, at county bridge (Mosquito Lake Road) 800 ft downstream from Heislers Creek, 5.6 mi southeast of Deming, and at mile 5.0.	75.4	1911, 1920-21‡, 1911,1920, 1955,1959, 1973, 1979-82	10- 5-82 5-24-83 7-14-83	168 546 2,330
		Pend Oreille River basin				
12396000 Calispell Creek	Pend Oreille River	Lat 48°14'40", long 117°20'26", in NE¼SW¼ sec.26, T.32 N., R.43 E., Pend Oreille County, 2.4 mi upstream from Calispell Lake, and 4.8 mi west of Dalkena.	68.3	1950-73‡, a1974, 1974, 1976-82	3-25-83 9- 6-83	172 26.2
12396100 Winchester Creek	Calispell Creek	Lat 48°16'52", long 117°21'44", in NW¼ sec.15, T.32 N., R.43 E., Pend Oreille County, at county road around Calispell Lake, and 4.8 mi southwest of Cusick.	16.8	1957‡, a1954, 1964-68, 1975,1977, 1980-82	3-25-83 5-16-83 9- 6-83	39.3 53.6 7.13
		Colville River basin				
12408000 Colville River	Franklin D. Roosevelt Lake	Lat 48°19'11", long 117°49'05", in NW¼NW¼ sec.31, T.33 N., R.40 E., Stevens County, upstream from county road bridge, just downstream from mouth of Blue Creek at town of Blue Creek, 5.5 mi northwest of Chewelah.	428	1923-24‡, 1926, 1958-59, 1960-65‡, 1975-77, 1979‡, 1980-82	3-25-83 9-9-83	511 89.9
		Spokane River basin				
12432000 Little Spokane River	Spokane River	Lat 47°46'59", long 117°31'43", in SE¼NW¼ sec.5, T.26 N., R.42 E., Spokane County, at State Highway 291 crossing, 1.1 mi upstream from mouth, and 5.3 mi west of Dartford.	700	1903-05, 1912, 1913-14‡, 1920-21, 1923-24, 1930-32, 1947-48, 1953, 1955-58, 1960-73, 1977-82	4- 6-83 5-18-83	1,160 706
Unnamed tributary	.....do.....	Lat 47°52'58", long 118°07'48", in SW¼NE¼ sec.34, T.27 N., R.37 E., Stevens County, Spokane Indian Reservation, at Sherwood Mine, 7.0 mi west of Wellpinit.	---	---	2-23-83 3-16-83	.14 .06
		Sanpoil River basin				
12434590 Sanpoil River	Franklin D. Roosevelt Lake	Lat 48°05'04", long 118°41'25", in NW¼SW¼ sec.20, T.30 N., R.33 E., Ferry County, Colville Indian Reservation, at county highway bridge 0.4 mi upstream from Jack Creek, and 0.5 mi north of Keller.	900	1963, 1975-77, 1980-82	3-21-83 4- 4-83 4-14-83 6-10-83	1,250 1,530 1,200 480
		Nespelem River basin				
12437505 Nespelem River	.....do.....	Lat 48°09'55", long 118°58'46", on south line of SE¼SE¼ sec.24, T.31 N., R.30 E., Okanogan County, Colville Indian Reservation, at county bridge at Nespelem, 0.2 mi downstream from millpond, and 3.9 mi upstream from Little Nespelem River.	123	1972-74‡, a1975-79, 1981-82	3-21-83 8- 3-83	343 30.7
		Okanogan River basin				
12443600 Similkameen River at Oroville	Okanogan River	Lat 48°56'05", long 119°26'27", in NE¼SW¼ sec.28, T.40 N., R.27 E., Okanogan County, at Twelfth Avenue bridge in Oroville.	3,590	1929-30, 1935, 1937, 1939-40, 1943-44, 1975-82	4-27-83 6-29-83 9- 1-83	4,500 3,740 837

‡ Operated as a continuous-record gaging station.
a Operated as a crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1983--Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Okanogan River basin--Continued				
12446000 Okanogan River	Columbia River	Lat 48°21'48", long 119°34'36", in SW¼NW¼ sec.16, T.33 N., R.26 E., Okanogan County, at Oak Street (formerly U.S. Highway 97) bridge in Okanogan, 150 ft northwest of Burlington Northern Railway depot, and 0.3 mi upstream from Salmon Creek.	b7,900	1911-25‡, 1976, 1979-82	3- 2-83 4-26-83 6-28-83	2,680 8,760 6,820
		Methow River basin				
Pine Creek	Early Winters Creek	Lat 48°34'48", long 120°37'33", in NE¼ sec.32, T.36 N., R.18 E., Okanogan County, at State Highway 20, 10 mi west of Mazama.	4.63	a1966-81, 1967-68, 1971-72, 1975,1982	6- 8-83	76.2
Early Winters Creek	Methow River	Lat 48°35'55", long 120°26'31", in NE¼NE¼ sec.26, T.10 N., R.19 E., Okanogan National Forest, Okanogan County, at State Highway 20 bridge at Early Winters Ranger Station, 0.3 mi upstream from mouth, and 1.7 mi northwest of Mazama. Note.--New bridge is at slightly different location than Mazama quad sheet indicates.	---	1975-82	10-12-82 8- 1-83	17.6 147
Methow River	Columbia River	Lat 48°35'23", long 120°24'20", in NE¼SE¼ sec.25, T.36 N., R.19 E., Okanogan County, Okanogan National Forest, at State Highway 20 bridge 0.2 mi southwest of Mazama, and at mile 65.3.	363	1942, 1967, 1970-72, 1975-82	10-12-82 8- 1-83	70.6 542
Andrews Creek	Chewack River	Lat 48°46'59", long 120°06'31", in NE¼NE¼ sec.20, T.38 N., R.22 E., Okanogan County, Okanogan National Forest, at road crossing, 500 ft upstream from mouth, and 22 mi north of Winthrop.	34.0	1967, 1970-71, 1973-75	1-15-76	c8.87
Chewack River	Methow River	Lat 48°33'53", long 120°10'35", in SE¼NW¼ sec.2, T.35 N., R.21 E., Okanogan County, at road crossing 0.9 mi downstream from Boulder Creek, and 5.4 mi north of Winthrop.	466	1942, 1978-82	10-13-82 8- 2-83	106 313
12448500 Methow River	Columbia River	Lat 48°28'26", long 120°10'35", in NE¼SW¼ sec.2, T.34 N., R.21 E., Okanogan County, at state highway road crossing, 1,500 ft downstream from Chewack River, at south end of Winthrop.	1,007	1912‡, 1948, 1971-72‡, 1977-82	10-12-82 8- 1-83	331 1,060
12449510 Methow River	.....do.....	Lat 48°21'55", long 120°06'54", in NE¼NW¼ sec.17, T.33 N., R.22 E., Okanogan County, 1,300 ft downstream from mouth of Twisp River, 0.3 mi east of center of Twisp, and at mile 40.0	1,301	1919-62‡, 1967, 1970, d1975-76, d1978-79, 1980-82	8- 3-83	1,180
		Entiat River basin				
12452990 Entiat River	Columbia River	Lat 47°39'48", long 120°14'58", in NW¼SE¼ sec.18, T.25 N., R.21 E., Chelan County, at bridge 1.2 mi west of Entiat High School, and at mile 1.5.	419	1971-72, 1975-82	10-26-82 12- 8-82 5-19-83 6- 1-83 7-19-83 9-14-83	218 102 1,360 4,880 555 203
		Wenatchee River basin				
12457800 Wenatchee River	.....do.....	Lat 47°40'34", long 120°43'58", in NE¼SW¼ sec.9, T.25 N., R.17 E., Chelan County, Wenatchee National Forest, at U.S. Highway 2 crossing and Tumwater Campground, 0.4 mi downstream from mouth of Chiwaukum Creek, 4.1 mi south of Winton, and at mile 35.5.	---	1977-82	10-13-82 9-13-83	696 973
12461200 East Branch Mission Creek tributary	East Branch Mission Creek	Lat 47°22'54", long 120°29'20", in NE¼SW¼ sec.20, T.22 N., R.19 E., Chelan County, Wenatchee National Forest, at road crossing, 9.7 mi south of Cashmere.	2.49	a1955-74, 1975-77	4- 1-83	3.03
		Douglas Creek basin				
Rattlesnake Springs	Rattlesnake Creek	Lat 47°27'03", long 119°45'29", in NW¼NE¼ sec.36, T.23 N., R.24 E., Douglas County, at spring 7.8 mi northeast of Palisades.	---	1978-82	10- 5-82 12- 8-82 1-28-83 3-22-83 4-27-83 8-17-83	.03 .12 .37 1.21 .89 .59

‡ Operated as continuous-record gaging station.
a Operated as a crest-stage gage.
b Approximately.
c Not previously published.
d Published these years as at a site 2.7 miles farther downstream, in error.

Discharge measurements made at miscellaneous sites during water year 1983--Continued

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Crab Creek basin				
Sinking Creek	Wilson Creek	Lat 47°40'18", long 118°43'13", in SE¼SW¼ sec. 7, T.25 N., R.33 E., Lincoln County, at State Highway 21 crossing, 7.0 mi south of Wilbur.	---	1961,	10- 4-82	0
				1977,	11-29-82	0
				1981-82	1-24-83	0
					3-11-83	7.89
					3-21-83	6.89
					3-31-83	11.0
					4-25-83	5.95
					5-10-83	4.68
					5-17-83	3.50
					6-20-83	.56
					7-12-83	.28
					8-15-83	0
		Yakima River basin				
12491700 Hause Creek	Tieton River	Lat 46°40'33", long 121°04'49", in NE¼ sec.28, T.14 N., R.14 E., Yakima County, at State Highway 14, 0.1 mi west of Tieton Ranger Station, and 2.5 mi east of Rimrock.	3.91	a1955-82	1-18-83	2.52
					3-15-83	8.80
					5-19-83	3.01
					9-18-83	e0.6
12511520 Yakima River	Columbia River	Lat 46°21'32", long 119°23'42", in NW¼NE¼ sec.14, T.10 N., R.27 E., Benton County, 2.4 mi downstream from Horn Rapids Dam, 4.0 mi northwest of Richland, and at mile 15.15.	---	1978-82	10-27-82	2,480
					8- 5-83	1,560
		Palouse River basin				
13348000 South Fork Palouse River	Palouse River	Lat 46°43'57", long 117°10'48", in NE¼NE¼ sec.6, T.14 N., R.45 E., Whitman County, on right bank at State Street crossing in Pullman, 600 ft upstream from Missouri Flat Creek, and at mile 22.2.	132	1934-42†,	10- 7-82	22.2
				1948,	1-12-83	73.4
				1954,	3-10-83	127
				1958-59,	5- 4-83	22.0
				1959-82†	8-16-83	5.77
		Walla Walla River basin				
14017600 Touchet River	Walla Walla River	Lat 46°02'29", long 118°40'59", in NE¼NE¼ sec.33, T.7 N., R.33 E., Walla Walla County, at U.S. Highway 12 crossing 0.5 mi west of Touchet, 0.6 mi upstream from mouth.	747	1962-65,	12-30-82	154
				1972-75,	4-15-83	217
				1977-82	6- 8-83	67.8
					8- 4-83	10.8
					9- 1-83	e1.6
		Klickitat River basin				
14112200 Little Klickitat River tributary	Little Klickitat River	Lat 45°50'15", long 120°47'50", in NW¼ sec.15, T.4 N., R.16 E., Klickitat County, at county road 1.5 mi northeast of Goldendale.	0.71	1960-82	1-19-83	.79

† Operated as a continuous-record gaging station.
a Operated as a crest-stage station.
e Estimate.

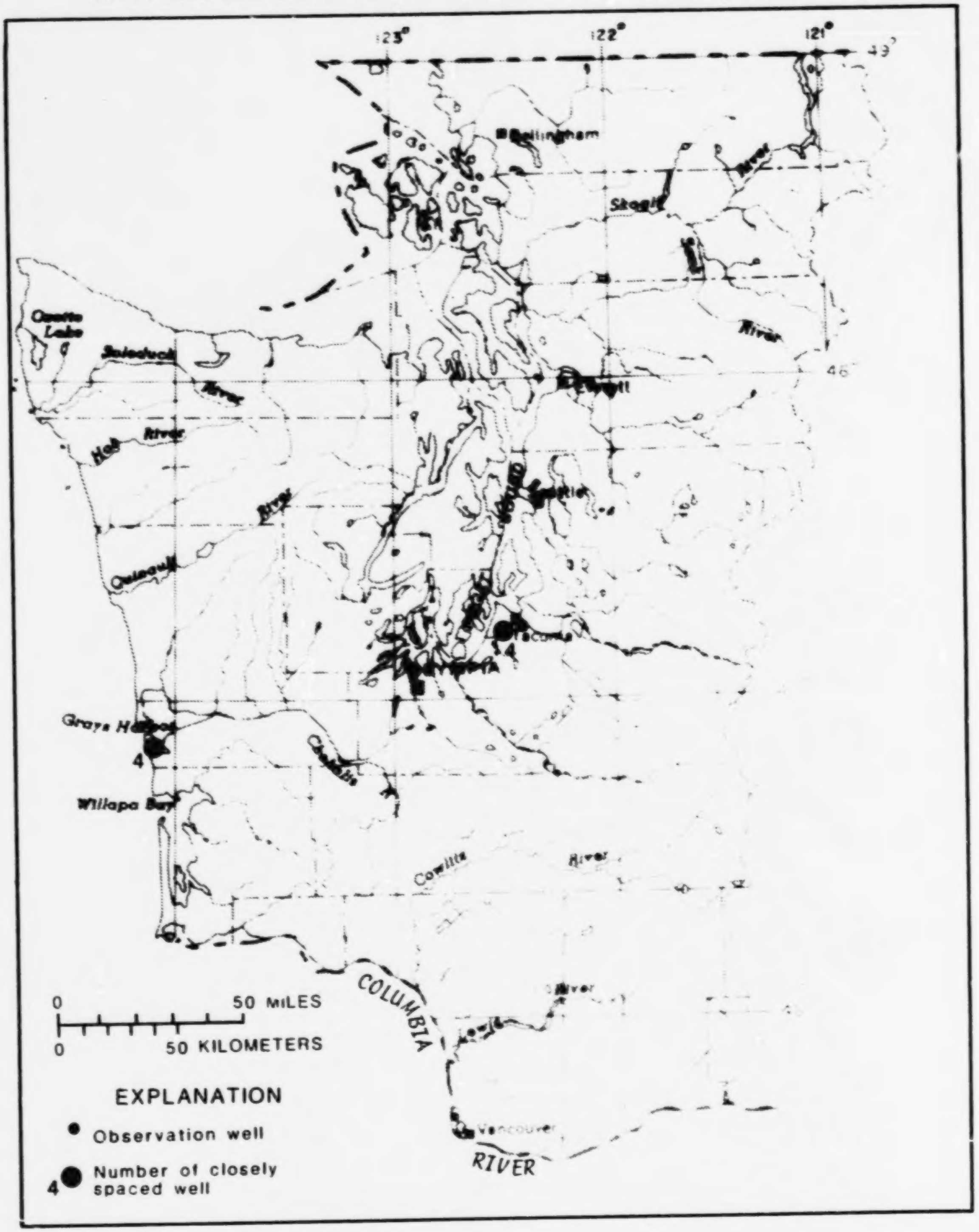
123°
122°
121°
49°
Bellingham
Skagit
River
Ozette Lake
Soleduck
River
Hoh River
River
Everett
Seattle
Quinault
Tacoma
4
Olympia
Grays Harbor
4
Willapa Bay
Chehalis
Cowlitz
River
River
COLUMBIA
Lewis
Vancouver
RIVER
0
50 MILES
0
50 KILOMETERS
EXPLANATION
● Observation well
4 ● Number of closely spaced well

Figure 34a.—Map of Western Washington showing locations of ground-water level observations.

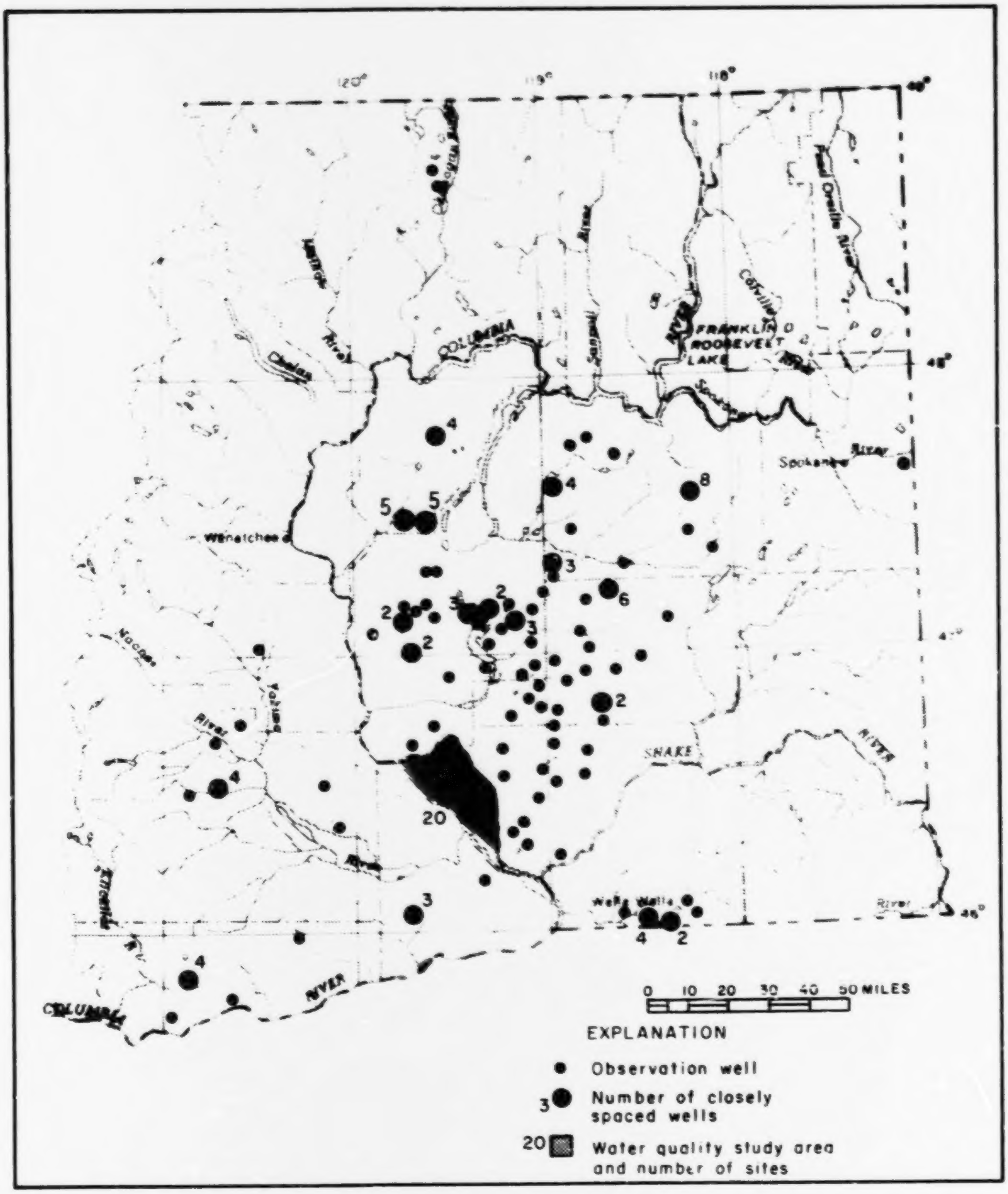
120°
119°
118°
49°
48°
47°
46°
COLUMBIA
River
Chelan
Methow
Okanogan River
Sanpoil River
Kettle River
Colville River
Pend Oreille River
FRANKLIN D. ROOSEVELT LAKE
Spokane River
Spokane
Wenatchee
Naches
Yakima River
Klickitat
SNAKE RIVER
Walla Walla
COLUMBIA RIVER
4
5
5
4
8
3
6
2
2
3
2
3
2
2
4
20
3
4
2
4
0 10 20 30 40 50 MILES
EXPLANATION
● Observation well
3● Number of closely spaced wells
20▨ Water quality study area and number of sites

Figure 34b.—Map of Eastern Washington showing locations of ground-water level observations.

ADAMS COUNTY

464603119085201. Local number, 15/29-26C1.
LOCATION.--Lat 46°46'03", long 119°08'52", Hydrologic Unit 17020016, at Othello.
Owner: Brick Patterson.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well. Diameter 6 in, depth 257 ft, cased to 150 ft.
DATUM.--Altitude of land-surface datum is 1,030 ft.
PERIOD OF RECORD.--September 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.1 ft below land-surface datum, Sept. 3, 1981; lowest measured, 201.6 ft below land-surface datum, May 6, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	136.0	JAN 26	90.6	APR 29	130.4	AUG 19	133.2
DEC 2	99.8	MAR 8	131.0	JUN 27	124.6		

464740118444001. Local number 15/32-13D1.
LOCATION.-- Lat 46°47'40", long 118°44'40", Hydrologic Unit 17020016, near Hatton.
Owner: State of Washington, Department of Highways.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 12 in, depth 602 ft, cased to 63 ft.
DATUM.--Altitude of land-surface datum is 1,216 ft.
PERIOD OF RECORD.--June 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 170.12 ft below land-surface datum, Nov. 2, 1962; lowest measured, 223.6 ft below land-surface datum, June 28, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	221.3	JAN 27	222.1	MAY 3	222.9	AUG 22	225.0
DEC 3	221.7	MAR 10	222.4	JUN 28	223.6		

464445118461002. Local number, 15/32-35E2.
LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.
Owner: REHCO
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--1½ in diameter open-ended pipe to 845 ft in 12 in diameter plugged off open section of drilled artesian well, total depth 966 ft, uncased depth interval from 840 to 966 ft.
DATUM.--Altitude of land-surface datum is 1,242 ft.
PERIOD OF RECORD.--October 1980 to current year.
REMARKS.--Water level measured in one of five piezometers.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 578.0 ft below land-surface datum, Jan. 26, 1983; lowest measured, 607 ft below land-surface datum, Sept. 27, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	605.9	NOV 30	591.5	MAR 28	592.2	JUL 28	591.0
OCT 14	605.8	JAN 26	578.0	MAY 25	588.5	SEP 23	605.2

464445118461003. Local number, 15/32-35E3.
LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.
Owner: REHCO
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--1½ in diameter open-ended pipe to 719 ft in 16 to 12 in diameter plugged off open section of drilled artesian well, total depth 825 ft, uncased depth interval from 714 to 825 ft.
REMARKS.--Water level measured in one of five piezometers.
DATUM.--Altitude of land-surface datum is 1,242 ft.
PERIOD OF RECORD.--October 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 579.7 ft below land-surface datum, May 26, 1982; lowest measured, 601.9 ft below land-surface datum, Sept. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	605.0	NOV 30	591.7	MAR 29	592.9	JUL 28	591.0
OCT 14	604.9	JAN 26	578.9	MAY 25	588.2		

ADAMS COUNTY--Continued

464445118461004. Local number, 15/32-35E4.
LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.
Owner: REHCO
AQUIFER.--Wanapum Basalt of Miocene Age.
WELL CHARACTERISTICS.--1½ in diameter open-ended pipe to 593 ft in plugged off open section of 16-in diameter drilled artesian well, total depth 699 ft, uncased depth interval from 588 to 699 ft.
DATUM.--Altitude of land-surface datum is 1,242 ft.
REMARKS.--Water level measured in one of five piezometers.
PERIOD OF RECORD.--November 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 512.1 ft below land-surface datum, Mar. 30, 1982; lowest measured, 560.7 ft below land-surface datum, Nov. 12, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	529.6	OCT 14	529.7	NOV 30	513.3

464445118461005. Local number, 15/32-35E5.
LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.
Owner: REHCO
AQUIFER.--Wanapum Basalt of Miocene Age.
WELL CHARACTERISTICS.--1½ in diameter open-ended pipe to 383 ft in plugged off open section of 16-in diameter drilled artesian well, total depth 573 ft, uncased depth interval from 378 to 573 ft.
DATUM.--Altitude of land-surface datum is 1,242 ft.
REMARKS.--Water level measured in one of five piezometers.
PERIOD OF RECORD.--October 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 295.2 ft below land-surface datum, Nov. 30, 1982; lowest measured, 355.3 ft below land-surface datum, Oct. 31, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 14	301.1	JAN 26	300.3	MAY 25	300.1	SEP 23	299.8
NOV 30	295.2	MAR 29	299.8	JUL 28	298.7		

464445118461006. Local number, 15/32-35E6.
LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.
Owner: REHCO
AQUIFER.--Wanapum Basalt of Miocene Age.
WELL CHARACTERISTICS.--1½ in diameter open-ended pipe to 295 ft inside a 16 in diameter drilled water-table well, cased to 36.5 ft, total depth 362 ft, uncased depth interval from 36.5 to 362 ft.
DATUM.--Altitude of land-surface datum is 1,242 ft.
REMARKS.--Water level measured in one of five piezometers.
PERIOD OF RECORD.--November 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 292.2 ft below land-surface datum, May 25, 1983; lowest measured, 324.9 ft below land-surface datum, Mar. 23, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 14	299.8	JAN 26	293.7	MAY 25	292.2	SEP 23	303.2
NOV 30	294.1	MAR 29	302.5	JUL 28	301.9		

465149119062801. Local number, 16/30-19E1.
LOCATION.--Lat 46°51'49", long 119°06'28", Hydrologic Unit 17020016, near Othello.
Owner: K. Summerville.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 487 ft.
DATUM.--Altitude of land-surface datum is 1,160 ft.
PERIOD OF RECORD.--May 1958, March 1963, March 1968, April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 41.16 ft below land-surface datum, Jan. 26, 1983; lowest measured, 189.90 ft below land-surface datum, May 12, 1958.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	43.44	JAN 26	41.16	APR 29	47.60	AUG 19	42.52
DEC 2	42.12	MAR 8	47.10	JUN 27	48.20		

ADAMS COUNTY--Continued

465100119001502. Local number, 16/30-26A2.
LOCATION.--Lat 46°51'00", long 119°00'15", Hydrologic Unit 17020016, near Othello.
Owner: Warden Hufferian Brethren
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 8 in, depth 1,120 ft.
DATUM.--Altitude of land-surface datum is 1,359 ft.
PERIOD OF RECORD.--April 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Higest water level measured, 238 ft below land-surface datum, Oct. 7, 1982; lowest measured, 501 ft below land-surface datum, Dec. 10, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	238	JAN 26	270	APR 29	287
DEC 2	261	MAR 8	328		

465225011845C001. Local number, 16/32-14A1.
LOCATION.--Lat 46°52'48", long 118°45'01", Hydrologic Unit 17020016, near Beatrice.
Owner: D. E. Phillips.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in, depth 910 ft cased to 67 ft.
DATUM.--Altitude of land-surface datum is 1,463 ft.
PERIOD OF RECORD.--October 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 275.4 ft below land-surface datum, Feb. 7, 1978; lowest measured, 503 ft below land-surface datum, Aug. 25, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	327	JAN 27	355	MAY 3	c366	AUG 22	a345
DEC 3	345	MAR 10	345	JUN 28	a378		

465910118581001. Local number, 16/32-25A1.
LOCATION.--Lat 46°51'00", long 118°43'53", Hydrologic Unit 17020016, near Hatton.
Owner: D. E. Phillips
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in, 812 ft, cased to 82 ft.
DATUM.--Altitude of land-surface datum is 1,457 ft.
PERIOD OF RECORD.--April 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 312.16 ft below land-surface datum, Sept. 3, 1974; lowest measured, 491 ft below land-surface datum, Aug. 25, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	320	JAN 27	348	MAY 3	c345	AUG 22	394
DEC 3	329	MAR 10	334	JUN 28	a398		

465700118510001. Local number, 17/32-19E1.
LOCATION.--Lat 46°57'00", long 118°51'00", Hydrologic Unit 17020015, at Roxboro.
Owner: State of Washington, Department of Natural Resources.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 258 ft.
DATUM.--Altitude of land-surface datum is 1,260 ft.
PERIOD OF RECORD.--June 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 104.96 ft below land-surface datum, Jan. 29, 1963; lowest measured, 227.2 ft below land-surface datum, Sept. 4, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	220.0	JAN 27	216.7	MAY 3	207.9	AUG 22	222.8
DEC 3	218.0	MAR 10	208.4	JUN 28	221.5		

a Well being pumped.
c Nearby well pumping.

ADAMS COUNTY--Continued

465730118410001. Local number, 17/33-17R1.
LOCATION.--Lat 46°57'30", long 118°41'00", Hydrologic Unit 17020015, near Lind.
Owner: D. C. Phillips
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 10 in, depth 184 ft, cased to 80 ft.
DATUM.--Altitude of land-surface datum is 1,310 ft.
REMARKS.--Pump installed December 1974.
PERIOD OF RECORD.--April 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.60 ft below land-surface datum, Dec. 5, 1976; lowest measured, 85.70 ft below land-surface datum, Dec. 14, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	40.8	JAN 27	39.8	MAY 3	41.1	AUG 22	40.0
DEC 3	40.2	MAR 10	40.2	JUN 28	40.9		

465824118354903. Local number, 17/34-7N1.
LOCATION.--Lat 46°58'24", long 118°35'49", Hydrologic Unit 17020015, at Lind.
Owner: City of Lind.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 to 12 in, depth 686 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 1,404 ft.
PERIOD OF RECORD.--June 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 105.60 ft below land-surface datum, Apr. 7, 1969; lowest measured, 140.89 ft below land-surface datum, Mar 10, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	137.37	JAN 27	133.02	MAY 3	131.75	AUG 22	134.72
DEC 3	134.82	MAR 10	132.88	JUN 28	137.73		

470232118572901. Local number, 18/31-20D1.
LOCATION.--Lat 47°02'32", long 118°57'29", Hydrologic Unit 17020015, near Warden.
Owner: J. Fox Estate.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 150 ft.
DATUM.--Altitude of land-surface datum is 1,255 ft.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Higest water level measured, 54.32 ft below land-surface datum, Oct. 4, 1973; lowest measured, 110.4 ft below land-surface datum, Mar. 9, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	85.6	JAN 26	105.60	APR 29	95.68	AUG 19	83.16
DEC 2	94.6	MAR 8	109.66	JUN 28	92.25		

471347118410101. Local number, 20/33-16E1.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test water-table well, diameter 10 in, total depth 750 ft, uncased depth interval from 70 to 94 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.34 ft below land-surface datum, June 20, 1975; lowest measured, 93.38 ft below land-surface datum, Apr. 23, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	85.9	JAN 25	86.2	APR 26	86.84	AUG 16	84.85
NOV 30	85.7	MAR 7	85.24	JUN 21	85.2		

ADAMS COUNTY--Continued

471347118410102. Local number, 20/33-16E2.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 158 to 183 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 107.35 ft below land-surface datum, Mar. 23, 1972; lowest measured, 142.2 ft below land-surface datum, June 23, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	141.4	JAN 25	141.4	APR 26	138.68	AUG 16	137.98
NOV 30	141.7	MAR 7	140.24	JUN 21	138.4		

471347118410103. Local number, 20/33-16E3.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 282 to 299 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water-level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 109.89 ft below land-surface datum, Feb. 23, 1972, lowest measured, 152.75 ft below land-surface datum, Oct. 10, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	151.1	JAN 25	150.2	APR 26	148.32	AUG 16	147.29
NOV 30	150.6	MAR 7	149.10	JUN 21	148.3		

471347118410104. Local number, 20/33-16E4.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 352 to 401 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 106.46 ft below land-surface datum, Mar. 23, 1972; lowest measured, 138.32 ft below land-surface datum, Mar. 7, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	137.9	JAN 25	137.4	APR 26	134.8	AUG 16	134.4
NOV 30	137.9	MAR 7	138.32	JUN 21	134.8		

471347118410105. Local number, 20/33-16E5.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 586 to 616 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 112.35 ft below land-surface datum, Feb 23, 1972; lowest measured, 299.9 ft below land-surface datum, June 25, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	295.0	JAN 25	245.4	APR 26	274.6	AUG 16	231.85
NOV 30	260.4	MAR 7	239.7	JUN 21	258.7		

ADAMS COUNTY--Continued

471347118410106. Local number, 20/33-15E6.
LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 676 to 701 ft.
DATUM.--Altitude of land-surface datum is 1,670 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 279.19 ft below land-surface datum, Apr. 21, 1971; lowest measured, 413.2 ft below land-surface datum, June 29, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	406.9	JAN 25	371.9	APR 26	372.6	AUG 6	388.2
NOV 30	384.1	MAR 7	364.9	JUN 21	397.9		

BENTON COUNTY

460237119383001. Local number, 7/25-36N1.
LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, total depth 860 ft, uncased depth interval from 105 to 185 ft.
DATUM.--Altitude of land-surface datum is 730 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 93.3 ft below land-surface datum, Sept. 14, 1982; lowest measured, 133.50 ft below land-surfacce datum, Nov. 1, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	92.1	MAY 16	91.3	JUL 19	91.6	SEP 10	90.7

460237119383003. Local number, 7/25-36N3.
LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 860 ft, uncased depth interval from 720 to 755 ft.
DATUM.--Altitude of land-surface datum is 730 ft.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 362.5 ft below land-surface datum, Jan. 18, 1979; lowest measured, 388.7 ft below land-surface datum, Sept. 14, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	382.0	MAY 16	382.3	JUL 19	388.9	SEP 10	392.2

460237119383004. Local number, 7/25-36N4.
LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 860 ft, uncased depth interval from 770 to 860 ft.
DATUM.--Altitude of land-surface datum is 730 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 361.9 ft below land-surface datum, Jan. 18, 1979; lowest measured, 387.65 ft below land-surface datum, Sept. 14, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	381.1	MAY 16	382.6	JUL 19	388.8	SEP 10	390.6

AVAILABLE

DOUGLAS COUNTY

472741119402202. Local number, 23/25-27L2.
LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Sagebrush Flat
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,260 ft, screened 1,260 to 1,265 ft in a 16-in to 10-inch diameter drilled artesian observation-test well, depth interval 1,205 to 1,300 ft.
DATUM.--Altitude of land-surface datum is 1,700 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--September 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 29, 1982	440.33	APR 27	435.9	JUN 22	434.7	AUG 17	433.2
MAR 22	436.7						

472741119402203. Local number, 23/25-27L3.
LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Sagebrush Flat.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,155 ft, screened 1,155 to 1,160 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 1,039 to 1,196 ft.
DATUM.--Altitude of land-surface datum is 1,700 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--September 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 29, 1982	440.32	APR 27	439.7	JUN 22	439.3	AUG 17	439.0
MAR 22	387.1						

472741119402204. Local number, 23/25-27L4.
LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Sagebrush Flat
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 987 ft, screened 987 to 992 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 963 to 1,030 ft.
DATUM.--Altitude of land-surface datum is 1,700 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--September 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 29, 1982	441.40	APR 27	440.5	JUN 22	440.4	AUG 17	440.2
MAR 22	390.3						

472741119402205. Local number, 23/25-27L5.
LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Sagebrush Flat.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 850 ft, screened 850 to 855 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 834 to 958 ft.
DATUM.--Altitude of land-surface datum is 1,700 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--September 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 29, 1982	441.42	APR 27	440.4	JUN 22	440.4	AUG 17	440.1
MAR 22	440.2						

DOUGLAS COUNTY--Continued

472741119402206. Local number, 23/25-27L6.
LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Sagebrush Flat.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled artesian observation-test well, casing diameter 16 in to 12 in, cased to 801 ft, depth 827 ft.
DATUM.--Altitude of land-surface datum is 1,700 ft.
REMARKS.--Water level measured in casing.
PERIOD OF RECORD.--September 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 29, 1982	441.32	APR 27	440.3	JUN 22	440.3	AUG 17	440.2
MAR 22	440.3						

472857119354004. Local number, 23/26-20D2.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,260 ft, screened 1,260 to 1,265 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 1,207 to 1,315 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	602.55	MAR 22	601.6	JUN 22	601.9	AUG 17	601.8
JAN 28	603.0	APR 27	601.8				

472857119354005. Local number, 23/26-20D3.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 935 ft, screened 935 to 940 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 856 to 992 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	516.20	MAR 22	493.0	JUN 22	492.3	AUG 17	491.9
JAN 28	498.3	APR 27	493.0				

472857119354006. Local number, 23/26-20D4.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 798 ft, screened 798 to 803 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 693 to 846 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	523.35	MAR 22	496.8	JUN 22	494.5	AUG 17	494.8
JAN 28	497.2	APR 27	496.3				

AVAILABLE

DOUGLAS COUNTY--Continued

472857119354007. Local number, 23/26-2005.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 588 ft, screened 588 to 593 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 551 to 615 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	567.1	MAR 22	546.8	JUN 22	544.4	AUG 17	543.0
JAN 28	549.4	APR 27	546.0				

472857119354008. Local number, 23/26-2006.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Casing diameter 1.25 in to 504 ft, screened 504 to 509 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 479 to 541 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	dry	JAN. 28	dry	MAR 22	dry	JUN 22	dry

472857119354009. Local number, 23/26-2007.
LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.
Owner: Washington Department of Ecology - Pixlee.
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled artesian well, casing diameter 16 in to 55 ft, depth 466 ft.
DATUM.--Altitude of land-surface datum is 1,920 ft.
REMARKS.--Water level measured in casing.
PERIOD OF RECORD.--October 1982 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	373.5	MAR 22	356.8	APR 27	359.1	JUN 22	359.2
JAN 28	362.3						

474855119303901. Local number, 27/26-25D1.
LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, total depth 760 ft, completed depth interval from 38 to 53 ft.
DATUM.--Altitude of land-surface datum is 2,215 ft.
REMARKS.--Water level measured in casing.
PERIOD OF RECORD.--April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.97 ft below land-surface datum, May 27, 1983; lowest measured, 22.95 ft below land-surface datum, Oct. 4, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	18.78	JAN 24	18.74	MAY 27	9.97	SEP 12	13.0
NOV 29	18.76	MAR 21	12.30	JUL 15	11.4		

DOUGLAS COUNTY--Continued

474855119303902. Local number, 27/26-25D2.
LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 70 to 152 ft, uncased.
DATUM.--Altitude of land-surface datum is 2,215 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.23 ft below land-surface datum, May 27, 1983; lowest measured, 102.48 ft below land-surface datum, Jan. 20, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	85.63	JAN 24	86.5	MAY 27	80.23	SEP 12	82.0
NOV 29	85.64	MAR 21	82.5	JUL 15	80.6		

474855119303904. Local number, 27/26-25D4.
LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocune to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 490 to 610 ft, uncased, and perforated from 465 to 485 ft.
DATUM.--Altitude of land-surface datum is 2,215 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 277.40 ft below land-surface datum, Apr. 20, 1974; lowest measured, 324.95 ft below land-surface datum, July 23, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	318.7	JAN 24	318.8	MAY 27	321.2	SEP 12	321.6
NOV 29	318.8	MAR 21	321.5	JUL 15	321.0		

474855119303905. Local number, 27/26-25D5.
LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 630 to 687 ft uncased, and screened from 750 to 760 ft.
DATUM.--Altitude of land-surface datum is 2,215 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 319.1 ft below land-surface datum, Nov. 29, 1982; lowest measured, 327.90 ft below land-surface datum, Apr. 20, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	319.8	JAN 24	319.4	MAY 27	321.5	SEP 12	321.4
NOV 29	319.1	MAR 21	322.3	JUL 15	320.9		

FRANKLIN COUNTY

462030119062001. Local number, 10/30-19E1.
LOCATION.--Lat 46°20'13", long 119°06'34", Hydrologic Unit 17020016, near Pasco.
Owner: Andrus and Roberts Produce Company.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled industrial water-table well, diameter 6 in, depth 395 ft.
DATUM.--Altitude of land-surface datum is 503 ft.
PERIOD OF RECORD.--April 1960 to November 1981, January to September 1983.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 82.1 ft below land-surface datum, Sept. 28, 1977; lowest measured, 141.73 ft below land-surface datum, Apr. 28, 1960.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
JAN 26	91.8	MAR 28	92.4	MAY 24	91.9	JUL 27	91.8

FRANKLIN COUNTY--Continued

462343119092802. Local number, 11/29-34J2.
LOCATION.--Lat 46°23'43", long 119°09'28", Hydrologic Unit 17020016, near Eltopia.
Owner: Bob Ransome.
AQUIFER.--Glacial gravel of Pliestocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 8 in, depth 211 ft, cased to 211 ft.
DATUM.--Altitude of land-surface datum is 692 ft.
PERIOD OF RECORD.--June 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 104.4 ft below land-surface datum, July 27, 1983; lowest measured, 187.0 ft below land-surface datum, June 1, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	b108.4	JAN 26	b105.9	MAY 24	b105.3	JUL 27	b104.4
NOV 29	b106.4	MAR 28	b105.6				

462830119043301. Local number, 11/30-5B1.
LOCATION.--Lat 46°28'30", long 119°04'33", Hydrologic Unit 17020016, near Eltopia.
Owner: Fred Holmes Community.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 8 in, depth 110 ft, cased to 29 ft.
DATUM.--Altitude of land-surface datum is 753 ft.
PERIOD OF RECORD.--January 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.2 ft below land-surface datum, Sept. 29, 1972; lowest measured, 62.1 ft below land-surface datum, Mar. 24, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	b33.5	JAN 26	b33.7	MAY 24	b35.5	JUL 27	b42.7
NOV 29	b37.7	MAR 28	35.8				

463339119125601. Local number, 12/29-5D1.
LOCATION.--Lat 46°33'39", long 119°12'56", Hydrologic Unit 17020016, near Mesa.
Owner: James Reynolds.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 181 ft, cased to 157 ft.
DATUM.--Altitude of land-surface datum is 610 ft.
PERIOD OF RECORD.--January 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.5 ft below land-surface datum, May 24, 1983; lowest measured, 147.1 ft below land-surface datum, Sept. 29, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	b115.4	JAN 26	b112.6	MAR 28	b114.2	MAY 24	b111.5
DEC 1	b113.9						

463231119001601. Local number, 12/30-12E1.
LOCATION.--Lat 46°32'31", long 119°00'16", Hydrologic Unit 17020016, at Eltopia.
Owner: Lee Hailey.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled stock water-table well, diameter 6 in, depth 121 ft, cased to 120 ft.
DATUM.--Altitude of land-surface datum is 675 ft.
PERIOD OF RECORD.--October 1957 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.3 ft below land-surface datum, Oct. 2, 1970; lowest measured, 108.69 ft below land-surface datum, Apr. 16, 1959.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 14	107.0	JAN 27	102.8	MAY 25	102.6	SEP 20	97.0
DEC 1	102.4	MAR 29	101.0	JUL 28	103.1		

b Well recently pumped.

463641119001001. Local number, 13/30-13M1.
LOCATION.--Lat 46°36'41", long 119°00'10", Hydrologic Unit 17020016, at Mesa.
Owner: P. H. Taylor.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic and stock water-table well, diameter 6 in, depth 186 ft, cased to 11 ft.
DATUM.--Altitude of land-surface datum is 956 ft.
PERIOD OF RECORD.--March 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 93.1 ft below land-surface datum, Sept. 20, 1983; lowest measured, 141.72 ft below land-surface datum, May 25, 1961.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 14	112.8	JAN 27	121.6	MAY 25	127.6	SEP 20	93.1
DEC 8	118.4	MAR 29	120.9	JUL 28	126.7		

463440118473001. Local number, 13/32-27N1.
LOCATION.--Lat 46°34'40", long 118°47'30", Hydrologic Unit 17020016, at Connell.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 323 ft.
DATUM.--Altitude of land-surface datum is 1,155 ft.
PERIOD OF RECORD.--October 1952, August 1956, June 1958, April 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 177.2 ft below land-surface datum, Mar. 28, 1980; lowest measured, 281.47 ft below land-surface datum, Oct. 4, 1950.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 14	179.6	JAN 27	177.9	MAY 25	176.4	SEP 20	175.2
DEC 1	178.8	MAR 28	176.8	JUL 28	176.2		

464028119101601. Local number, 14/29-27E1.
LOCATION.--Lat 46°40'28", long 119°10'16", Hydrologic Unit 17020016, near Othello.
Owner: U.S. Bureau of Reclamation.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 8 in, depth 498 ft, cased to 435 ft.
DATUM.--Altitude of land-surface datum is 947 ft.
PERIOD OF RECORD.--December 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 57.2 ft below land-surface datum, Nov. 29, 1982; lowest measured, 235.79 ft below land-surface datum, Mar. 24, 1960.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 13	b74.5	JAN 26	64.1	MAY 24	71.4	SEP 20	65.7
NOV 29	57.2	MAR 28	b63.8	JUL 27	64.8		

b Well recently pumped.

GRANT COUNTY

465539119332101. Local number, 17/26-34D1.
LOCATION.--Lat 46°55'39", long 119°33'21", Hydrologic Unit 17020015, near Royal City.
Owner: J. P. Needham.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 240 ft, cased to 60 ft.
DATUM.--Altitude of land-surface datum is 1,085 ft.
PERIOD OF RECORD.--September 1940, March 1956 to December 1958, March 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.06 ft below land-surface datum, Mar. 3, 1971; lowest measured, 177.66 ft below land-surface datum, Sept. 22, 1956.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	3.54	JAN 26	2.83	APR 29	3.54	AUG 19	2.80
DEC 2	3.59	MAR 8	3.44	JUN 24	3.05		

465851119161601. Local number, 17/28-11F1.
LOCATION.--Lat 46°58'51", long 119°16'16", Hydrologic Unit 17020015, near Moses Lake.
Owner: U.S. Bureau of Reclamation.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian test well, diameter 2 in, depth 168 ft, cased to 8 ft.
DATUM.--Land-surface datum is 1,051.6 ft National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--March 1950 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.96 ft below land-surface datum, Mar. 5, 1980; lowest measured, 141.01 ft below land-surface datum, Jan. 31, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 7	100.20	MAR 9	102.55

465903119070901. Local number, 17/29-12C1.
LOCATION.--Lat 46°59'03", long 119°07'09", Hydrologic Unit 17020015, near Warden.
Owner: Robert Hayes.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 315 ft.
DATUM.--Altitude of land-surface datum is 1,212 ft.
PERIOD OF RECORD.--September 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 33.35 ft below land-surface datum, Oct. 17, 1967; lowest measured, 220.13 ft below land-surface datum, Aug. 31, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	39.56	JAN 27	43.15	MAY 2	49.58	AUG 23	46.40
DEC 2	41.75	MAR 9	49.16	JUN 28	47.08		

465626119010601. Local number, 17/30-26C1.
LOCATION.--Lat 46°56'26", long 119°01'06", Hydrologic Unit 17020015, near Warden.
Owner: Albert Widmer.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well diameter 6 in, depth 400 ft.
DATUM.--Altitude of land-surface datum is 1,402 ft.
PERIOD OF RECORD.--August 1955, June 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 236.15 ft below land-surface datum, Feb. 28, 1973; lowest measured, 292.03 ft below land-surface datum, Oct. 3, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	256.3	JAN 26	255.30	MAY 2	263.58	AUG 19	256.5
DEC 2	255.7	MAR 8	255.32	JUN 27	256.2		

AVAILABLE

GRANT COUNTY--Continued

470352119433201. Local number, 18/25-8M1.
LOCATION.--Lat 47°03'52", long 119°43'32", Hydrologic Unit 17020015, near George.
Owner: Stetner Brothers.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in, depth 112 ft, lined with concrete to 112 ft.
DATUM.--Altitude of land-surface datum is 1,179 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.83 ft below land-surface datum, June 21, 1960; lowest measured, 98.76 ft below land-surface datum, Apr. 27, 1953.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	31.47	JAN 26	30.37	APR 29	29.97	AUG 18	27.99
DEC 2	30.75	MAR 8	30.18	JUN 24	37.60		

470339119433001. Local number, 18/25-8N1.
LOCATION.--Lat 47°03'39", long 119°43'30", Hydrologic Unit 17020015, near George.
Owner: Stetner Brothers.
AQUIFER.--Sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 323 ft.
DATUM.--Altitude of land-surface datum is 1,173 ft.
PERIOD OF RECORD.--May 1942, September 1949 to November 1960, October 1963 to December 1982 (discontinued).
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.74 ft below land-surface datum, Jan. 20, 1970; lowest measured, 97.42 ft below land-surface datum, June 23, 1953.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER TO DECEMBER 1982

Date	Water Level	Date	Water Level
OCT 6	29.18	DEC 2	28.37

470308119405801. Local number, 18/25-15E1.
LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Wanapum basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled observation-test well, diameter 10 in, total depth 976 ft, cased to 976 ft, perforated at intervals from 350 to 900 ft.
DATUM.--Altitude of land-surface datum is 1,156.69 ft.
PERIOD OF RECORD.--August 1975 to December 1977, February 1979 to current year.
REMARKS.--Well deepened to 1,610 ft in February 1978 (see well 18/25-15E1D1), then backfilled when piezometers 18/25-15E6, 7, & 8 were installed in the well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.1 ft below land-surface datum, Mar. 12, 1981; lowest measured, 231.40 ft below land-surface datum, June 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	152.1	JAN 26	86.9	APR 29	103.2	AUG 19	220.2
DEC 2	95.5	MAR 8	71.1	JUN 24	202.2		

470308119405802. Local number, 18/25-15E6.
LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Grand Ronde basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,168 ft, screened 1,163 to 1,168 ft.
DATUM.--Altitude of land-surface datum is 1,156.69 ft.
PERIOD OF RECORD.--March 1979 to current year.
REMARKS.--Water level measured in piezometer.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 379.2 ft below land-surface datum, Dec. 10, 1981; lowest measured, 382.39 ft below land-surface datum, Mar. 22, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	379.4	JAN 26	378.5	APR 29	378.5	AUG 19	378.3
DEC 2	379.1	MAR 8	378.8	JUN 24	378.6		

AVAILABLE

GRANT COUNTY--Continued

470308119405803. Local number, 18/25-15E7.
LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Grande Ronde basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,411 ft, screened 1,406 to 1,411 ft.
DATUM.--Altitude of land-surface datum is 1,156.69 ft.
PERIOD OF RECORD.--March 1979 to current year.
REMARKS.--Water level measured in piezometer.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 378.6 ft below land-surface datum, Apr. 29 and Aug. 19, 1983; lowest measured, 383.0 ft below land-surface datum, June 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	379.6	JAN 26	378.7	APR 29	378.6	AUG 19	378.6
DEC 2	379.3	MAR 8	379.1	JUN 24	379.0		

470308119405804. Local number, 18/25-15E8.
LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Grande Ronde basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,546 ft, screened 1,541 to 1,546 ft.
DATUM.--Altitude of land-surface datum is 1,156.69 ft.
PERIOD OF RECORD.--March 1979 to current year.
REMARKS.--Water level measured in piezometer.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 380.9 ft below land-surface datum, Aug. 19, 1983; lowest measured, 382.69 ft below land-surface datum, Mar. 22, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	381.3	JAN 26	381.3	APR 29	381.0	AUG 19	380.9
DEC 2	381.3	MAR 8	381.1	JUN 24	381.0		

470148119412601. Local number, 18/25-28B1.
LOCATION.--Lat 47°01'48", long 119°41'26", Hydrologic Unit 17020015.
Owner: Farm Management Service.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, depth 735 ft.
DATUM.--Altitude of land-surface datum is 1,151 ft.
PERIOD OF RECORD.--June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 48.13 ft below land-surface datum, Feb. 11, 1976; lowest measured, 225.8 ft below land-surface datum, Sept. 9, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	111.14	JAN 26	50.02	APR 29	a280	AUG 18	a123.4
DEC 2	78.65	MAR 8	52.95	JUN 24	a124.2		

470030119390301. Local number, 18/25-35K1.
LOCATION.--Lat 47°00'30", long 119°39'03", Hydrologic Unit 17020015, near George.
Owner: Farm Management Service.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, depth 960 ft.
DATUM.--Altitude of land-surface datum is 1,140 ft.
PERIOD OF RECORD.--May 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.4 ft below land-surface datum, Feb. 15, 1977; lowest measured, 248 ft below land-surface datum, Dec. 10, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	145.9	JAN 26	64.23	MAR 8	58.12	APR 29	101.78
DEC 2	86.8						

a Well being pumped.

GRANT COUNTY--Continued

470445119160301. Local number, 18/28-2L1.
LOCATION.--Lat 47°04'45", long 119°16'03", Hydrologic Unit 17020015, near Moses Lake.
Owner: Arlo Dunning.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 184 ft.
DATUM.--Altitude of land-surface datum is 1,128 ft.
PERIOD OF RECORD.--October 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.45 ft below land-surface datum, Sept. 4, 1970; lowest measured, 74.25 ft below land-surface datum, May 14, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	3.58	MAR 10	4.85

470233119115601. Local number, 18/29-20B1.
LOCATION.--Lat 47°02'33", long 119°11'56", Hydrologic Unit 17020015, near Moses Lake.
Owner: R. DeBeaument.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 219 ft.
DATUM.--Altitude of land-surface datum is 1,179 ft.
PERIOD OF RECORD.--October 1949 to February 1950, August 1954 to October 1964, March 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.71 ft below land-surface datum, Apr. 24, 1961; lowest measured, 210.79 ft below land-surface datum, Sept. 17, 1949.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	47.26	JAN 27	52.82	MAY 2	56.87	AUG 23	51.25
DEC 2	49.37	MAR 9	55.58	JUN 28	53.58		

470417119043401. Local number, 18/30-8C1.
LOCATION.--Lat 47°04'17", long 119°04'34", Hydrologic Unit 17020015, near Warden.
Owner: Wayne Gott.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 8 in, depth 228 ft.
DATUM.--Altitude of land-surface datum is 1,225 ft.
PERIOD OF RECORD.--May 1951 to October 1951, October 1954 to April 1956, February 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 52.25 ft below land-surface datum, Sept. 16, 1969; lowest measured, 181.26 ft below land-surface datum, Aug. 31, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	60.26	JAN 27	68.99	MAY 2	73.98	AUG 23	59.67
DEC 2	65.11	MAR 8	72.13	JUN 28	65.65		

470022119023801. Local number, 18/30-34M1.
LOCATION.--Lat 47°00'22", long 119°02'38", Hydrologic Unit 17020015, near Warden.
Owner: H. Yamamoto.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 147 ft.
DATUM.--Altitude of land-surface datum is 1,174 ft.
PERIOD OF RECORD.--February 1943 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 35.10 ft below land-surface datum, Feb. 28, 1973; lowest measured, 108.70 ft below land-surface datum, Oct. 29, 1947.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	45.28	JAN 27	52.35	MAY 2	47.90	AUG 22	43.20
DEC 2	46.03	MAR 8	47.95	JUN 28	43.29		

AVAILABLE

GRANT COUNTY--Continued

470519119550801. Local number, 19/23-34R1.
LOCATION.--Lat 47°05'19", long 119°55'08", Hydrologic Unit 17020015, near George.
Owner: Nate Defriese.
AQUIFER.--Basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled domestic bedrock well, diameter 6 in depth 243 ft.
DATUM.--Altitude of land-surface datum is 1,302 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.70 ft below land-surface datum, Aug. 18, 1983; lowest measured, 229.19 ft below land-surface datum, Oct. 24, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	31.56	JAN 26	45.38	APR 28	48.44	AUG 18	21.70
DEC 2	33.48	MAR 6	49.00	JUN 24	26.90		

470627119393701. Local number, 19/25-26N1.
LOCATION.--Lat 47°06'27", long 119°39'37", Hydrologic Unit 17020015, near George.
Owner: Rudy Stetner.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 110 ft.
DATUM.--Altitude of land-surface datum is 1,185 ft.
PERIOD OF RECORD.--September 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.09 ft below land-surface datum, Mar. 5, 1971; lowest measured, 106.63 ft below land-surface datum, Mar. 3, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	62.04	JAN 26	60.84	APR 28	52.98	AUG 18	58.88
DEC 1	59.39	MAR 8	53.85	JUN 24	c56.69		

470631119420501. Local number, 19/25-28M1.
LOCATION.--Lat 47°06'31", long 119°42'05", Hydrologic Unit 17020015, near George.
Owner: Edwin A. Wyatt.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in, depth 124 ft.
DATUM.--Altitude of land-surface datum is 1,194 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.00 ft below land-surface datum, Apr. 19, 1972; lowest measured, 114.47 ft below land-surface datum, Apr. 7, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 7	42.52	JAN 26	39.80	APR 28	38.25	AUG 18	41.50
DEC 1	39.30	MAR 8	37.55	JUN 24	c39.40		

470608119331502. Local number, 19/26-34D1.
LOCATION.--Lat 47°06'08", long 119°33'15", Hydrologic Unit 17020015, near Moses Lake.
Owner: Washington State Highway.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 96 ft, cased to 65 ft.
DATUM.--Altitude of land-surface datum is 1,168 ft.
PERIOD OF RECORD.--March 1959 to July 1963, November 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.46 ft below land-surface datum, Mar. 11, 1981; lowest measured, 101.53 ft below land-surface datum, Sept. 16, 1959.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	24.17	JAN 26	23.36	APR 28	23.54	AUG 18	24.10
DEC 1	23.93	MAR 7	23.63	JUN 24	23.87		

c Nearby well pumping.

GRANT COUNTY--Continued

470805119263801. Local number, 19/27-16N1.
LOCATION.--Lat 47°08'05", long 119°26'38", Hydrologic Unit 17020015, near Moses Lake.
Owner: Wes Avara.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug irrigation water-table well, diameter 84 in, depth 74 ft, lined with concrete to 65 ft.
DATUM.--Altitude of land-surface datum is 1,094 ft.
PERIOD OF RECORD.--December 1942 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.95 ft below land-surface datum, Mar. 11, 1982; lowest measured, 81.77 ft below land-surface datum, Oct. 28, 1947.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	49.69	MAR 8	51.80

470652119230301. Local number, 19/27-26A1.
LOCATION.--Lat 47°06'52", long 119°23'03", Hydrologic Unit 17020015, near Moses Lake.
Owner: C. M. Grant.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug domestic and irrigation water-table well, diameter 48 to 6 in, depth 52 ft.
DATUM.--Altitude of land-surface datum is 1,073 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 24.68 ft below land-surface datum, Mar. 14, 1974; lowest measured, 41.86 ft below land-surface datum, July 22, 1953.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	31.95	MAR 8	32.58

470658119261401. Local number, 19/27-28B1.
LOCATION.--Lat 47°06'58", long 119°26'14", Hydrologic Unit 17020015, near Moses Lake.
Owner: Jose Betes.
AQUIFER.--Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 12 in, depth 90 ft.
DATUM.--Altitude of land-surface datum is 1,101 ft.
PERIOD OF RECORD.--December 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 58.68 ft below land-surface datum, Mar. 8, 1983; lowest measured, 63.84 ft below land-surface datum, Mar. 8, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	62.79	MAR 8	58.68

471020119210701. Local number, 19/28-6C1.
LOCATION.--Lat 47°10'20", long 119°21'07", Hydrologic Unit 17020015, near Moses Lake.
Owner: Ray Turpinseed.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug irrigation water-table well, diameter 48 in, depth 37 ft, lined with concrete to 37 ft.
DATUM.--Altitude of land-surface datum is 1,078 ft.
PERIOD OF RECORD.--March 1939 to April 1942, August 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 29.10 ft below land-surface datum, June 24, 1971; lowest measured, 40.83 ft below land-surface datum, Feb. 7, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	33.36	JAN 27	31.92	APR 28	34.78	AUG 18	a33.70
DEC 1	32.25	MAR 8	36.46	JUN 24	a33.73		

a well being pumped.

GRANT COUNTY--Continued

470913119192401. Local number, 19/28-8H2.
LOCATION.--Lat 47°09'13", long 119°19'24", Hydrologic Unit 17020014, at Moses Lake.
Owner: Mr. Baker.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug irrigation and domestic water-table well, diameter 10 in, depth 48 ft.
DATUM.--Altitude of land-surface datum is 1,090 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.43 ft below land-surface datum, Aug. 3, 1977; lowest measured, 48.4 ft below land-surface datum, Mar. 11, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	42.9	JAN 27	42.5	MAY 2	a46.25	AUG 23	a42.9
DEC 1	43.0	MAR 9	45.54	JUN 29	a44.15		

470935119174201. Local number, 19/28-10D1.
LOCATION.--Lat 47°09'35", long 119°17'42", Hydrologic Unit 17020015, at Moses Lake.
Owner: Harold Mathenia.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug and drilled domestic water-table well, diameter 40 to 6 in, depth 102 ft.
DATUM.--Altitude of land-surface datum is 1,114 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.1 ft below land-surface datum, Sept. 12, 1967; lowest measured, 62.08 ft below land-surface datum, Aug. 30, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level
MAR 21	52.35

470753119192402. Local number, 19/28-20A1.
LOCATION.--Lat 47°07'53", long 119°19'24", Hydrologic Unit 17020015, at Moses Lake.
Owner: M. C. Wilson.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in, depth 39 ft, lined with concrete to 38 ft.
DATUM.--Altitude of land-surface datum is 1,080 ft.
PERIOD OF RECORD.--November 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.75 ft below land-surface datum, Oct. 10, 1980; lowest measured, 46.95 ft below land-surface datum, Mar. 1, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	36.05	JAN 27	33.76	MAY 2	36.83	AUG 23	34.48
DEC 1	34.95	MAR 9	35.55	JUN 29	34.68		

470621119144401. Local number, 19/28-25L1.
LOCATION.--Lat 47°06'21", long 119°14'44", Hydrologic Unit 17020015, at Moses Lake.
Owner: Paul Landis.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in, depth 492 ft.
DATUM.--Altitude of land-surface datum is 1,192 ft.
PERIOD OF RECORD.--October 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.3 ft below land-surface datum, Sept. 5, 1974; lowest measured, 185.88 ft below land-surface datum, Aug. 29, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	43.75	JAN 24	44.92	MAY 2	46.48	AUG 16	43.13
NOV 29	45.78	MAR 7	45.93	JUN 29	45.27		

a Well being pumped.

471027119124902. Local number, 19/29-6A1.
LOCATION.--Lat 47°10'27", long 119°12'49", Hydrologic Unit 17020015, near Wheeler.
Owner: Donald C. Lust.
AQUIFER.--Alluvial sand and gravel of Quaternary Age.
WELL CHARACTERISTICS.--Dug domestic water-table well, diameter 48 in, concrete, depth 48.5 ft.
DATUM.--Altitude of land-surface datum is 1,190 ft.
REMARKS.--Dug to 48 ft, drilled 48 to 150 ft, backfilled to approximately 30 ft, and dug out to 48.5 ft.
PERIOD OF RECORD.--April 1942, September 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.97 ft below land-surface datum, June 23, 1966; lowest measured, 47.56 ft below land-surface datum, Apr. 14, 1942.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	17.83	MAR 9	19.80

470811119074301. Local number, 19/29-14J1.
LOCATION.--Lat 47°08'11", long 119°07'43", Hydrologic Unit 17020015, near Wheeler.
Owner: Ron Hanson.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 12 in, depth 368 ft.
DATUM.--Altitude of land-surface datum is 1,357 ft.
PERIOD OF RECORD.--December 1950 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 132.21 ft below land-surface datum, Dec. 30, 1964; lowest measured, 234.03 ft below land-surface datum, Oct. 27, 1951.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	169.17	JAN 24	173.82	MAY 2	176.05	AUG 23	153.27
NOV 29	171.29	MAR 9	175.49	JUN 29	154.07		

470729119101501. Local number, 19/29-22E1.
LOCATION.--Lat 47°07'29", long 119°10'15", Hydrologic Unit 17020015, near Wheeler.
Owner: Carnation Company.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 14 in, depth 560 ft.
DATUM.--Altitude of land-surface datum is 1,293 ft.
PERIOD OF RECORD.--June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 48 ft below land-surface datum, Oct. 18, 1978, Oct. 18, 1979, and Oct. 20, 1981; lowest measured, 94.10 ft below land-surface datum, Mar. 11, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 5	59.82	MAR 9	[illegible]9.15

470626119101801. Local number, 19/29-28J1.
LOCATION.--Lat 47°06'26", long 119°10'18", Hydrologic Unit 17020015, near Wheeler.
Owner: J. E. Anderson.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, depth 800 ft.
DATUM.--Altitude of land-surface datum is 1,235 ft.
PERIOD OF RECORD.--June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.8 ft below land-surface datum, Oct. 14, 1977; lowest measured, 49.3 ft below land-surface datum, Oct. 18, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 5	41.32	MAR 9	37.94

AVAILABLE

GRANT COUNTY--Continued

470952118592701. Local number, 19/30-1L1.
LOCATION.--Lat 47°09'52", long 118°59'27", Hydrologic Unit 17020015, near Ruff.
Owner: A. L. Ramm.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 12 in, depth 523 ft, cased to 37 ft.
DATUM.--Altitude of land-surface datum is 1,420 ft.
PERIOD OF RECORD.--January 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 257.0 ft below land-surface datum, Apr. 2, 1976; lowest measured, 410 ft below land-surface datum, Dec. 5, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	a394	JAN 24	391	MAY 2	a306	AUG 23	a396
DEC 3	389	MAR 9	294	JUN 29	a400		

471955119324701. Local number, 21/26-10L2.
LOCATION.--Lat 47°19'55", long 119°32'47", Hydrologic Unit 17020015, at Ephrata.
Owner: D. L. Nelson.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in, depth 123 ft, cased to 100 ft.
DATUM.--Altitude of land-surface datum is 1,260 ft.
PERIOD OF RECORD.--September 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.87 ft below land-surface datum, Aug. 28, 1975; lowest measured, 68.27 ft below land-surface datum, Dec. 7, 1949.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	20.54	JAN 26	20.09	APR 27	20.60	AUG 17	21.38
NOV 30	20.35	MAR 10	20.20	JUN 22	24.83		

472009119300101. Local number, 21/26-12F1.
LOCATION.--Lat 47°20'09", long 119°30'01", Hydrologic Unit 17020015, near Ephrata.
Owner: Grant County.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in, depth 183 ft.
DATUM.--Altitude of land-surface datum is 1,259 ft.
PERIOD OF RECORD.--December 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.85 ft below land-surface datum, Apr. 13, 1978; lowest measured, 117.77 ft below land-surface datum, Mar. 13, 1950.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	86.47	JAN 25	82.77	APR 26	87.40	AUG 16	82.68
NOV 30	83.39	MAR 7	85.08	JUN 21	87.50		

473644119161101. Local number, 24/28-2C1.
LOCATION.--Lat 47°36'44", long 119°16'11", Hydrologic Unit 17020014, near Coulee City.
Owner: Amax Corporation.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 12 in, depth 400 ft.
DATUM.--Altitude of land-surface datum is 1,661 ft.
PERIOD OF RECORD.--October 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 52.7 ft below land-surface datum, Feb. 29, 1968; lowest measured, 123.5 ft below land-surface datum, Aug. 23, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	86.3	JAN 25	70.8	APR 27	62.1	AUG 23	101.9
NOV 30	74.6	MAR 9	64.2	JUN 22	95.8		

a Well being pumped.

AVAILABLE

GRANT COUNTY--Continued

473505119085701. Local number, 24/29-10R1.
LOCATION.--Lat 47°35'05", long 119°08'57", Hydrologic Unit 17020014, near Coulee City.
Owner: Harold Isaak.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 7 in, depth 120 ft.
DATUM.--Altitude of land-surface datum is 1,771 ft.
PERIOD OF RECORD.--October 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.8 ft below land-surface datum, Apr. 27, 1983; lowest measured, 93.84 ft below land-surface datum, Apr. 14, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	bc82.2	JAN 25	75.0	APR 27	70.8	AUG 23	c73.8
NOV 30	78.4	MAR 9	71.4	JUN 29	c72.3		

GRAYS HARBOR COUNTY

465123124062201. Local number, 16/12W-24J4.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.
DATUM.--Altitude of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 187 to 192 ft, water level measured in 12-in diameter casing.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.63 ft below land-surface datum, Jan. 20, 1982; lowest measured, 11.05 ft below land-surface datum, Oct. 4, 1974, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
JAN 27	8.92	AUG 19	10.47

465123124062202. Local number, 16/12W-24J5.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.
DATUM.--Altitude of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 269 to 279 ft, water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.30 ft below land-surface datum, Jan. 10, 1978; lowest measured, 14.37 ft below land-surface datum, Jan. 20, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
JAN 27	9.44	AUG 19	10.27

465123124062203. Local number, 16/12W-24J6.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.
DATUM.--Altitude of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 327 to 332 ft, water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.36 ft below land-surface datum, Jan. 20, 1982; lowest measured. 10.37 ft below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
JAN 27	8.18	AUG 19	9.85

b Well recently pumped.
c Nearby well pumping.

AILABLE

GRAYS HARBOR COUNTY--Continued

465123124062204. Local number, 16/12W-24J7.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sandy clay of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.
DATUM.--Altitude of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 516 to 521 ft, water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.68 ft below land-surface datum, Jan. 27, 1983; lowest measured, 20.28 ft below land-surface datum, Aug. 19, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
JAN 27	7.68	AUG 19	20.28

KITTITAS COUNTY

465111120272701. Local number, 16/19-28C1.
LOCATION.--Lat 46°51'11", long 120°27'27", Hydrologic Unit 17030001, near Ellensburg.
Owner: State of Washington
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, 10- to 8-in diameter, cased to 474 ft, total depth 1,019 ft, uncased depth interval from 474 to 1,019 ft.
REMARKS.--Well 16/19-28C1 is inside well 16/19-28C2.
DATUM.--Altitude of land-surface datum is 1,425 ft.
PERIOD OF RECORD.--February 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.79 ft below land-surface datum, Aug. 20, 1980; lowest measured, 24.33 ft below land-surface datum, Sept. 23, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 6	22.6	JAN 18	22.3	MAY 19	20.7	JUL 22	22.1
NOV 30	22.4	MAR 16	21.5				

465111120272702. Local number, 16/19-28C2.
LOCATION.--Lat 46°51'11", long 120°27'27", Hydrologic Unit 17030001, near Ellensburg.
Owner: State of Washington
AQUIFER.--Grande Ronde Basalt of Miocene Age.
WELL CHARACTERISTICS.--Drilled 12-in diameter observation artesian well, total depth 474 ft, uncased depth interval from 169 to 474 ft.
DATUM.--Altitude of land-surface datum is 1,425 ft.
REMARKS.--Well 16/19-28C1 is inside well 16/19-28C2.
PERIOD OF RECORD.--March 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.12 ft below land-surface datum, Mar. 1, 1978; lowest measured, 51.62 ft below land-surface datum, June 3, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 30	47.3	MAR 16	47.6	MAY 19	45.9	JUL 22	47.3
JAN 18	47.9						

465538120204801. Local number, 17/20-29R1.
LOCATION.--Lat 46°55'38", long 120°20'48", Hydrologic Unit 17030001, near Ellensburg.
Owner: State of Washington
AQUIFER.--Sand and gravel of Ellensburg Formation of Miocene Age.
WELL CHARACTERISTICS.--Drilled 10-in diameter observation water-table well, depth 400 ft , cased to 400 ft.
DATUM.--Altitude of land-surface datum is 1,830 ft.
PERIOD OF RECORD.--October 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.9 ft below land-surface datum, Oct. 5. 1978; lowest measured, 80.7 ft below land-surface datum, Feb. 5, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level
OCT 6	59.6	MAR 16	75.5

455008120561301. Local number, 4/15-16F1.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.
Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Altitude of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 40 to 210 ft, water level measured in piezometer.

PERIOD OF RECORD.--March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.1 ft below land-surface datum, Apr. 12, 1976; lowest measured, 31.1 ft below land-surface datum, Sept. 8, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	30.4	MAR 17	26.5	SEP 8	31.1

455008120561302. Local number, 4/15-16F2.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.
Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Altitude of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 215 to 330 ft, water level measured in piezometer.

PERIOD OF RECORD.--March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.0 ft below land-surface datum, Apr. 12, 1976; lowest measured, 31.0 ft below land-surface datum, Sept. 8, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	30.4	MAR 17	26.4	SEP 8	31.0

455008120561303. Local number, 4/15-16F3.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.
Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Altitude of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 500 to 580 ft, water level measured in piezometer.

PERIOD OF RECORD.--March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.6 ft below land-surface datum, Apr. 12, 1976; lowest measured, 31.5 ft below land-surface datum, Sept. 8, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	30.8	MAR 17	26.9	SEP 8	31.5

455008120561304. Local number, 4/15-16F4.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.
Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Altitude of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 335 to 440 ft, water level measured in piezometer.

PERIOD OF RECORD.--March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 195.6 ft below land-surface datum, Mar. 16, 1982; lowest measured, 223.60 ft below land-surface datum, Apr. 30, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	201.8	MAR 17	195.9	SEP 8	199.5

KLICKITAT COUNTY--Continued

455458120112702. Local number, 5/21-16L2.
LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 1,469 to 1,474 ft.
DATUM.--Altitude of land-surface datum is 2,304 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 677.25 ft below land-surface datum, Mar. 1, 1982; lowest measured, 682.7 ft below land-surface datum, May 16, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	680.7	MAY 16	682.7	JUL 19	678.4	SEP 9	682.2

455458120112704. Local number, 5/21-16L4.
LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 1,092 to 1,097 ft.
DATUM.--Altitude of land-surface datum is 2,304 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.0 ft below land-surface datum, Mar. 1, 1982; lowest measured, 681.3 below land-surface datum, May 16, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	680.3	MAY 16	681.3	JUL 19	679.2	SEP 9	680.0

455458120112705. Local number, 5/21-16L5.
LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 966 to 971 ft.
DATUM.--Altitude of land-surface datum is 2,304 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.05 ft below land-surface datum, Dec. 9, 1981, Mar. 1, 1982; lowest measured, 682.2 ft below land-surface datum, May 16, Sept. 9, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	680.3	MAY 16	682.2	JUL 19	681.8	SEP 9	682.2

455458120112706. Local number, 5/21-16L6.
LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 802 to 807 ft.
DATUM.--Altitude of land-surface datum is 2,304 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.05 ft below land-surface datum, Dec. 9, 1981, Mar. 1, 1982; lowest measured, 682.2 ft below land-surface datum, May 16, Sept. 9, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	680.3	MAY 16	682.2	JUL 19	681.7	SEP 9	682.2

KLICKITAT COUNTY--Continued

455458120112707. Local number, 5/21-16L7.
LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 423 to 598 ft.
DATUM.--Altitude of land-surface datum is 2,304 ft.
REMARKS.--Water level measured in piezometer.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 580.0 ft below land-surface datum, Dec. 9, 1981; lowest measured, 583.8 ft below land-surface datum, July 19, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
FEB 1	582.7	MAY 16	583.1	JUL 19	583.8	SEP 9	582.3

LINCOLN COUNTY

471937118544402. Local number, 21/31-10M2.
LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.
Owner: Mrs. Robert Schell.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.
DATUM.--Altitude of land-surface datum is 1,610 ft.
REMARKS.--Monitored depth interval from 98 to 735 ft, water level measured in piezometer.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 230.25 ft below land-surface datum, Jan. 8, 1973; lowest measured, 289.7 ft below land-surface datum, June 21, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	286.3	JAN 25	283.6	APR 26	282.7	AUG 16	288.8
NOV 30	283.1	MAR 3	283.0	JUN 21	289.7		

471937118544403. Local number, 21/31-10M3.
LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.
Owner: Mrs. Robert Schell.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.
DATUM.--Altitude of land-surface datum is 1,610 ft.
REMARKS.--Monitored depth interval from 742 to 1,480 ft, water level measured in piezometer.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 231.32 ft below land-surface datum, Jan. 8, 1973; lowest measured, 338.3 ft below land-surface datum, Oct. 4, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	338.3	JAN 25	310.0	APR 26	307.0	AUG 16	326.8
NOV 30	317.1	MAR 7	310.0	JUN 21	327.8		

471937118544404. Local number, 21/31-10M4.
LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.
Owner: Mrs. Robert Schell.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.
DATUM.--Altitude of land-surface datum is 1,610 ft.
REMARKS.--Monitored depth interval from 1,488 to 2,300 ft, water level measured in piezometer.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 224.56 ft below land-surface datum, May 24, 1976; lowest measured, 241.9 ft below land-surface datum, Oct. 4, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	241.9	JAN 25	240.8	APR 26	238.8	AUG 16	238.5
NOV 30	241.0	MAR 7	239.9	JUN 21	238.5		

LINCOLN COUNTY--Continued

473433118560301. Local number, 24/31-16E1.
LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, depth 750 ft, cased to 60 ft.
DATUM.--Altitude of land-surface datum is 1,845 ft.
REMARKS.--Monitored depth interval from 60 to 316 ft, water level measured in 10 in diameter casing.
PERIOD OF RECORD.--May 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 175.20 ft below land-surface datum, Sept. 1, 1975; lowest measured, 186.4 ft below land-surface datum, Mar. 18, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	183.3	JAN 24	183.6	APR 26	181.9	AUG 15	176.7
NOV 29	183.2	MAR 9	182.4	JUN 20	179.0		

473433118560302. Local number 24/31-16E2.
LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 60 ft.
DATUM.--Altitude of land-surface datum is 1,845 ft.
REMARKS.--Monitored depth interval from 424 to 456 ft, water level measured in piezometer.
PERIOD OF RECORD.--May 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 345.65 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.1 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	385.5	JAN 24	390.4	APR 26	377.3	AUG 15	375.5
NOV 29	392.2	MAR 9	381.9	JUN 20	375.5		

473433118560303. Local number, 24/31-16E3.
LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft cased to 60 ft.
DATUM.--Altitude of land-surface datum is 1,845 ft.
REMARKS.--Monitored depth interval from 494 to 556 ft, water level measured in piezometer.
PERIOD OF RECORD.--May 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 345.53 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.6 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	385.4	JAN 24	389.5	APR 26	377.3	AUG 15	375.4
NOV 29	392.0	MAR 9	382.0	JUN 20	375.5		

473433118560304. Local number, 24/31-16E4.
LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 60 ft.
DATUM.--Altitude of land-surface datum is 1,845 ft.
REMARKS.--Monitored depth interval 650 to 698 ft, water level measured in piezometer.
PERIOD OF RECORD.--May 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 346.50 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.5 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	385.2	JAN 24	389.7	APR 26	377.1	AUG 15	375.3
NOV 29	391.9	MAR 9	381.9	JUN 20	375.4		

AILABLE

LINCOLN COUNTY--Continued

473442118162201. Local number, 24/36-16A1.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 75 to 116 ft, water level measured in 10 in casing.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.52 ft below land-surface datum, May 1, 1974; lowest measured, 46.10 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	41.0	JAN 24	38.4	APR 25	34.37	AUG 15	35.14
NOV 29	41.4	MAR 7	35.8	JUN 20	34.54		

473442118162202. Local number, 24/36-16A2.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 123 to 160 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.38 ft below land-surface datum, May 1, 1974; lowest measured, 46.22 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	41.0	JAN 24	38.4	APR 25	33.87	AUG 15	34.77
NOV 29	41.5	MAR 7	35.7	JUN 20	31.58		

473442118162203. Local number, 24/36-16A3.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 208 to 224 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.24 ft below land-surface datum, May 1, 1974; lowest measured, 46.25 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	41.0	JAN 24	38.4	APR 25	34.17	AUG 15	34.83
NOV 29	41.5	MAR 7	35.8	JUN 20	34.60		

473442118162204. Local number, 24/36-16A4.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 242 to 261 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.47 ft below land-surface datum, May 1, 1974; lowest measured, 46.45 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	41.2	JAN 24	38.9	APR 25	34.29	AUG 15	35.31
NOV 29	41.6	MAR 7	36.2	JUN 20	34.74		

LINCOLN COUNTY--Continued

473442118162205. Local number, 24/36-16A5.
LOCATION.--47°34'42", long 188°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 315 to 365 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.90 ft below land-surface datum, May 1, 1974; lowest measured, 50.53 ft below land-surface datum, Sept. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	45.1	JAN 24	43.2	APR 25	37.93	AUG 15	40.25
NOV 29	44.4	MAR 7	41.8	JUN 20	40.61		

473442118162206. Local number, 24/36-16A6.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 451 to 491 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.93 ft below land-surface datum, Mar. 2, 1976; lowest measured, 66.34 ft below land-surface datum, Sept. 20, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	46.5	JAN 24	44.2	APR 25	44.49	AUG 15	41.86
NOV 29	46.4	MAR 7	43.4	JUN 20	42.05		

473442118162207. Local number, 24/36-16A7.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 590 to 635 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 162.47 ft below land-surface datum, Mar. 2, 1972; lowest measured, 213.6 ft below land-surface datum, Aug. 23, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	209.0	JAN 24	198.2	APR 25	188.15	AUG 15	204.83
NOV 29	202.3	MAR 7	195.0	JUN 20	197.28		

473442118162208. Local number, 24/36-16A8.
LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.
DATUM.--Altitude of land-surface datum is 2,372 ft.
REMARKS.--Monitored depth interval from 728 to 750 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 162.82 ft below land-surface datum, Mar. 2, 1972; lowest measured, 214.77 ft below land-surface datum, Aug. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 4	209.0	JAN 24	198.4	APR 25	192.3	AUG 15	205.9
NOV 29	202.3	MAR 7	195.0	JUN 20	195.20		

PIERCE COUNTY

471358122302207. Local number, 20/2-11J7.
LOCATION.--Lat 47°13'58", long 122°30'22", Hydrologic Unit 17110019.
Owner: Fircrest Well No. 3.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in, depth 152 ft, perforated 88 to 94 ft and 141 to 149 ft.
DATUM.--Altitude of land-surface datum is 285 ft.
PERIOD OF RECORD.--August 1963 to February 1964, December 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 58.00 ft below land-surface datum, May 25, 1983; lowest measured, 68.21 ft below land-surface datum, Oct. 1, 1973. Water level measurements affected by nearby pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	61.90	JAN 25	59.90	MAR 9	59.05	MAY 25	58.00
JUL 22	58.20	SEP 26	58.70				

471329122310501. Local number, 20/2-14F2.
LOCATION.--Lat 47°13'29", long 122°31'05", Hydrologic Unit 17110019.
Owner: Fircrest Well No. 6.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled water-table well, diameter 16 in, depth 203 ft, screened 162 to 172 ft and 178 to 198 ft.
DATUM.--Altitude of land-surface datum is 365 ft.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.00 ft below land-surface datum, Sept. 26, 1983; lowest measured, 175.84 ft below land-surface datum, May 6, 1980. Water level measurements are affected by nearby pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	153.20	JAN 25	153.80	MAR 9	151.70	MAY 25	151.20
JUL 22	155.70	SEP 26	151.00				

471308122305501. Local number, 20/2-14L1.
LOCATION.--Lat 47°13'08", long 122°30'55", Hydrologic Unit 17110019.
Owner: Town of Fircrest, well No. 8.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 20 in, depth 141 ft, cased to 112 ft.
DATUM.--Altitude of land-surface datum is 295 ft.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.21 ft below land-surface datum, Apr. 24, 1972; lowest measured, 98.81 ft below land-surface datum, Mar. 10, 1981. Water levels affected by nearby pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	82.62	JAN 25	87.02	MAR 9	80.42	MAY 25	86.97
JUL 22	87.32	SEP 26	86.22				

471338122282201. Local number, 20/3-18C1.
LOCATION.--Lat 47°13'38", long 122°28'22", Hydrologic Unit 17110019.
Owner: City of Tacoma.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused test artesian well, diameter 12 in, depth 185 ft, cased to 152 ft.
DATUM.--Altitude of land-surface datum is 310 ft.
PERIOD OF RECORD.--March 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.85 ft below land-surface datum, Oct. 5, 1954; lowest measured, 127.38 ft below land-surface datum, Mar. 27, 1974. Water level measurements are affected by nearby pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 25	104.88	NOV 26	104.28	DEC 23	104.01	JAN 25	102.98
FEB 25	101.35	MAR 25	101.12	APR 25	100.48	MAY 25	100.13
JUN 24	100.39	JUL 22	106.38	AUG 26	110.28	SEP 26	110.78

SPOKANE COUNTY

474011117072901. Local number, 25/45-16C1.
LOCATION.--Lat 47°40'11", long 117°07'29", Hydrologic Unit 17010305, near Greenacres.
Owner: Inland Empire Paper Company.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug unused irrigation water-table well, diameter 96 in, depth 129 ft, lined with gunite cement to 129 ft.
DATUM.--Altitude of land-surface datum is 2,060.4 ft National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--April 1929 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 84.56 ft below land-surface datum, June 17, 1953; lowest measured, 114.53 ft below land-surface datum, Dec. 8, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 25	105.92	JAN 25	101.24	APR 27	98.00	JUL 25	100.95
NOV 24	103.58	FEB 24	100.60	MAY 25	98.44	AUG 24	102.95
DEC 22	102.97	MAR 24	97.02	JUN 28	100.26	SEP 22	103.03

WALLA WALLA COUNTY

460014118281801. Local number, 6/35-18A1.
LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.
DATUM.--Altitude of land-surface datum is 670 ft.
REMARKS.--Monitored depth interval from 90 to 230 ft, water level measured in 12-in diameter casing.
PERIOD OF RECORD.--September 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.7 ft below land-surface datum, Mar. 17, 1980; lowest measured, 45.70 ft below land-surface datum, Jan. 27, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 3	28.7	FEB 24	26.2	JUN 27	28.2	AUG 4	27.9
DEC 30	31.2	APR 15	24.1				

460014118281802. Local number, 6/35-18A2.
LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.
DATUM.--Altitude of land-surface datum is 670 ft.
REMARKS.--Monitored depth interval from 710 to 730 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.20 ft below land-surface datum, Apr. 1, 1974; lowest measured, 200.8 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 3	181.4	FEB 24	158.7	JUN 27	178.8	AUG 4	167.7
DEC 30	170.8	APR 15	152.9				

460014118281803. Local number, 6/35-18A3.
LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test artesian well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.
DATUM.--Altitude of land-surface datum is 670 ft.
REMARKS.--Monitored depth interval from 740 to 1,204 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.10 ft below land-surface datum, Apr. 1, 1974; lowest measured, 201.0 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 3	181.9	FEB 24	159.1	JUN 27	178.2	AUG 4	169.0
DEC 30	174.5	APR 15	153.9				

WALLA WALLA COUNTY--Continued

460014118281804. Local number, 6/35-18A4.
LOCATION.--Lat 46°00'14", long 118°28'19", Hydrologic Unit 17070102, near Walla Walla.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Basalt of Miocene to Pliocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.
DATUM.--Altitude of land-surface datum is 670 ft.
REMARKS.--Monitored depth interval from 1,216 to 1,308 ft, water level measured in piezometer.
PERIOD OF RECORD.--September 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.60 ft below land-surface datum, Apr. 1, 1974; lowest measured, 201.9 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 3	182.8	FEB 24	160.0	JUN 27	179.1	AUG 4	169.7
DEC 30	175.2	APR 15	154.2				

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October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons